

Clatsop County Community College



Catalog
1961 - 1962

FORWARD

Clatsop County Community College is now a reality--something many people in Clatsop County have been working for for many years.

This being a reality means that any person has the opportunity to continue his education, either as a vocation or an avocation. Recognizing the importance of education in our society means a greater number of people in our county will have the chance to better prepare themselves to succeed in a very competitive world. It means that they will be able to better meet the needs as individuals, as well as being better-informed citizens.

Education must be a continuous process and the college extends this for our people, recognizing when learning stops, we stop living.

D. V. Olds
Superintendent

CLATSOP COUNTY COMMUNITY COLLEGE

Objectives

As an integral part of a public school system, Clatsop County Community College and Adult Evening School subscribes to the Democratic ideals of a free society. As such, it recognizes that it has a responsibility toward the individual, toward the community of which it is a part, and toward society as a whole. Clatsop County Community College seeks to meet these needs by offering the following types of instruction and services:

1. Vocational Education: Courses designed to provide intensive and thorough training leading to employment in the skilled fields, in technical and business positions, and in other fields in which occupational competence can be achieved.

2. Lower-Division Education: Courses which will enable students, including those who matriculate with scholastic deficiencies, to complete the first two years of four-year college and university work. These courses satisfy the lower division requirements in the liberal arts.

3. Adult Education: Courses designed to meet the needs of the community in making available training to assist adults to develop or improve their general educational level or their occupational skills. Classes are also offered of an avocational or recreational nature.

CLATSOP COUNTY COMMUNITY COLLEGE

Objectives

As an integral part of a public school system, Clatsop County Community College and Adult Learning Center is dedicated to the democratic ideal of a free society. As such, it recognizes that it has a responsibility toward the individual, toward the community, of which it is a part, and toward society as a whole. Clatsop County Community College seeks to meet these needs by offering the following types of instruction and services:

1. Vocational Education: Courses designed to provide instruction and through training prepare for employment in the skilled fields, as well as to upgrade positions, and in other fields in which vocational opportunities can be enhanced.
2. Adult Education Instruction: Courses which will enable students, including those who enroll with scholastic deficiencies, to complete the first two years of four-year college and university work. These courses satisfy the latest divisional requirements in the liberal arts.
3. Adult Education: Courses designed to meet the needs of the community in adult self-improvement training to assist adults in becoming more productive and better educated individuals in their occupational fields. Courses are also offered of an educational or recreational nature.

CLATSOP COUNTY COMMUNITY COLLEGE
COOPERATING AGENCIES
CLATSOP COUNTY SCHOOL DISTRICT NO. 1C
Astoria, Oregon

E. D. TOWLER - County School Superintendent

D. V. Olds Superintendent	Richard D. Boss, Director Clatsop County Community College
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BOARD OF DIRECTORS

Robert S. Lovell, Chairman
Jack Daly, Director
Dr. John Hickman, Director
Vernon Mogenson, Director
Arthur Stangland, Director
Helen E. Murray, Clerk

CLATSOP COLLEGE ADVISORY COMMITTEE

<u>School District</u>	<u>Board Members</u>	<u>Lay Members</u>
1C Astoria	Arthur Stangland	A. H. Hubbell
4C Knappa	Donald Corkill	Helen Hunt
5 Lewis & Clark	William Larson	Frances Hess
10C Seaside	Henry Norling	Dr. Fred Rawls
11C Olney	John Christie	Richard Fisher
15C Gearhart	Buell Ward	Maryon Greenough
30C Warrenton	William Roundy	C. A. Fertig

OREGON STATE DEPARTMENT OF EDUCATION

Dr. Leon P. Minear Superintendent Public Instruction	O. I. Paulson, Director Vocational & Post-High School Education
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William G. Loomis, Director
Trade and Industrial Education

STATE BOARD OF HIGHER EDUCATION

Dr. James W. Sherburne
Chairman, Community
College Committee

CLATSOP COUNTY COMMUNITY COLLEGE FOUNDATION

O F F I C E R S

<u>Name and Title</u>	<u>Organization Represented</u>
Mrs. Dewey Dunn President	Warrenton P.T.A.
Mrs. Frank Hayner 1st Vice President	Clatsop County Council of P.T.A.'s
Clifford Blomquist 2nd Vice President	Astoria Plywood Corp.
Mrs. W. M. Hendrickson Treasurer	Astoria High School P.T.A.
Mrs. Ragnar Nyback Assistant Secretary	Associate Member
Beryl Swails Assistant Treasurer	Associate Member

M E M B E R S

Richard Koreski	Central Labor Council
Deskin Bergey	Pacific Power & Light Co.
James Spain Jr.	John Jacob Astor P.T.A.
Charles Farmer	Astoria Kiwanis Club
Harry Coffman	Seaside High School P.T.A.
Student Body President	Clatsop College

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GENERAL INFORMATION

History

Clatsop County Community College was established by the Astoria School District No. 1C Board of Education in 1958. The first year the school operated an Adult Evening Program with a limited number of college transfer courses and very few full-time students. In March of that year, the Electronics Engineering Aide Technician Program was initiated. In September, 1959, the school opened its doors offering a full program of Lower Division Liberal Arts and Business Education classes in addition to Electronics and the Adult Evening School.

On June 14, 1961, the State Board of Education approved Clatsop College as an official college under Oregon Law 1961, Chapter 602, and Oregon Law 1959, Chapter 641.

In addition to the broad offering in the Lower Division Liberal Arts and Sciences, a variety of programs in the Vocational-Technical fields are in the planning stages. Such areas as Cosmetology, IBM Key Punch Machine Operation, Automotive Machinists, and Marine Technology are under study.

The 1961-1962 school year will prove to be the biggest in the history of the college with an ever-increasing number of young people planning to attend.

School officials are presently circulating a petition to ask the State Board of Education to hold an election for the purpose of organizing the college on a county-wide basis.

A day school in separate facilities by September of 1962, is a strong possibility with additional aid from State funds. The Old Astoria High School has been selected as the site for development. We are planning on operating the school day and night, beginning in 1962-1963.

Authority

Clatsop County Community College is operated by Astoria School District No. 1C Board of Education in cooperation with the State Board of Education. Liberal Arts and Sciences courses and professors are all approved by the State System of Higher Education, Community College Committee; the Vocational-Technical curriculums are organized in cooperation with the State Department of Education, Division of Vocational Education, with all instructors meeting certification requirements.

Purpose

The purpose of Clatsop County Community College is to provide the county with a Lower Division College Parallel Program designed to serve the needs of those persons who wish to complete two years of the Baccalaureate degree. The Vocational-Technical program is designed to provide the theoretical and skilled training necessary for persons seeking employment in the occupational areas for which training is made available. The Adult Evening School serves those people who wish to learn a vocation or avocation, or perhaps upgrade themselves in their present employment.

Entrance Requirements

Graduation from an accredited high school or the equivalent is desirable. However, eligibility may be established through an evaluation of previous

education, work experience, and appropriate testing. High school youngsters are allowed to enroll in their senior year, providing they are doing "B" or better work in high school, and have permission of their parents and principal.

Diplomas and Certificates

No diploma or certificate is being issued in the Lower Division Liberal Arts and Sciences Division at this time. However, for students meeting the Junior Certificate requirements of state campus institutions the Associate Degree of Arts will be awarded starting this year. In the Vocational-Technical courses diplomas will be issued to persons completing a curriculum according to the standards of the school. The school issues the Associate Degree in Applied Science to all students completing the Engineering Technology curriculum. Certificates of Attainment will be issued upon request for individual courses completed and these will be credited toward obtaining a curriculum diploma. Certificates are given to persons completing adult classes, upon request.

Job Placement and Housing

A job placement service will be maintained to help students obtain part-time employment to assist in their training as well as to aid in placing graduates in industry. Assistance will be given in locating satisfactory housing while in school.

Schedule

The school will operate from 4:00 p.m. to 11:00 p.m. daily, Monday through Friday, with class periods of 50 minutes each. A bulletin outlining

the classes to be offered, beginning dates, time and place, will be published each term and distributed generously throughout the county.

Instructional Staff

The instructional staff in the Lower Division Liberal Arts and Sciences Division are all approved by one of the state campus institutions and will meet standards outlined by the State System of Higher Education. The Vocational-Technical instructors will be select engineering technicians or business personnel normally employed during the day in business or industry and maintained on a part-time instructional basis. These instructors will meet State Department of Education requirements.

Tuition and Fees

Liberal Arts and Sciences Division:

Full-time students.	.8 or more credit	
(Per term)	hours per week, \$85.	
	For the three-term	
	school year, \$255.	
Part-time students.	.2 credit hours	\$20
(Per term)	3 credit hours	30
	4 credit hours	40
	5 credit hours	50
	6 credit hours	60
	7 credit hours	70
	Minimum charge	\$20
Out-of-State charge.	8 or more credit	
(Per term)	hours, \$25.	

Vocational-Technical Division:

Full-time students. . . .	.20 or more clock hours (Per term) per week, \$85. For the three-term school year, \$255.
Part-time students. . . .	\$.6 per unit until clock (Per term) hours reach 20 per week. Minimum charge, \$12.
Out-of-State charge . . .	For 20 or more hours, (Per term) \$25.

Adult Evening School:

Vocational Adult classes. .	\$.10 (Per class, per term)
General Adult classes . .	\$.10 (Per class, per term)

Apprenticeship Fees:

Apprenticeship classes. .	\$.10 (Per class, per term)
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Special Fees

Late Registration Fee, Per Week \$1.00
(To be charged after the second class meeting, a delinquent penalty of \$1.00 per week is added to the regular fee for credit classes.)

Check Irregularity Fee. \$1.00
(If institutional charges are met by a check which is returned because of any irregularity for which the student is responsible - NSF, illegal signature, improper account number, etc. - a fine of \$1 per business day will be charged. Maximum penalty: \$5.)

Grades

Grades will be issued at the close of each term. The letters, A, B, C, D, F, and Inc. will be used to designate relative standing in class. A denotes outstanding performance; B of lesser excellence but above average; C as average work; D as below average, but still passing; F as failure; and Inc. as an incomplete. Incompletes may be made up within three months and a grade earned. If this is not done in the specified time, the Inc. becomes an F. All persons will be expected to earn an average grade of C or better, in order to continue in the courses, unless special arrangements are made with the director.

Credit Hour Load

A full-time student will normally carry 15 to 17 hours in the Lower Division Liberal Arts and Sciences. No person working full-time will be allowed to take more than six hours in this division. A person who is enrolled for 20 or more clock hours in the Vocational-Technical Division, will be considered full-time. Anyone working full-time should not plan to take more than 8 clock hours per week.

Anyone who wishes to take more than the allowed limits of this requirement should contact the director for permission.

Scholarships and Loans

The school will aid any student who desires to obtain a scholarship or loan to finance the tuition charges. Many groups in the community are making an increasing number of scholarships available to young people who wish to further their education.

Veteran Benefits

Veterans are urged to contact the director regarding state and federal aid. This also applies to servicemen on active duty, regarding armed services educational aid.

CLATSOP COUNTY COMMUNITY COLLEGE

LOWER DIVISION LIBERAL ARTS AND SCIENCES DIVISION

ART

BIOLOGICAL SCIENCES

BUSINESS ADMINISTRATION

CHEMISTRY

ECONOMICS

ENGLISH

GEOGRAPHY

HEALTH

HISTORY

MATHEMATICS

PHYSICAL EDUCATION

PHYSICAL SCIENCES

POLITICAL SCIENCES

PSYCHOLOGY

SOCIOLOGY

SPEECH

WRITING

Courses meet Junior Certificate requirements at campus institutions in Oregon. Transferable to state schools.

DIVISION OF LIBERAL ARTS AND SCIENCES

The Division of Liberal Arts and Sciences represents the ancient and continuing effort of men to extend the range of their experience beyond the narrow limits of the time and place in which they find themselves at birth. To enjoy maximum freedom, men must know all they can about themselves and their environment, both physical and social. The Liberal Arts and Sciences are a group of studies designed to assist and direct the exploration of man's nature and his position in the world.

By the help of some of these studies, we are able to compare our own experiences with those of men in other times, places, and circumstances, and thus share in the inherited wisdom and satisfaction of mankind. Through others, we deepen and extend our knowledge of our physical environment. Knowledge--scientific, historical, and literary--is the indispensable condition of the good life of free men.

ENTRANCE REQUIREMENTS

There are no entrance requirements, beyond the general entrance requirements of the college, for students intending to choose a major within the Division of Liberal Arts and Sciences.

Students intending to major in any of the natural sciences are, however, advised to present at least two units of high school mathematics and two units of high school science. Experience has proved that students who lack this preparation are handicapped in college work in science.

GROUP REQUIREMENTS

Many campus institutions require enrollment in several one-year sequence courses to meet group or divisional desires. A complete list of approved sequences will aid the student in selecting courses which will meet his needs on campus. Once a sequence is selected the student should complete the year in the subject. Students enrolled in Liberal Arts or Secondary Education will normally select two sequences in each of the three groups during their first two years.

Humanities

Literature

Eng 101, 102, 103.	Survey of English Literature.
Eng 107, 108, 109.	World Literature.
Eng 201, 202, 203.	Shakespeare.

Writing

Wr 111, 112, 113.	English Composition.
Wr 211, 212, 213.	Advanced Writing.

Speech

Sp 111, 112, 113.	Fundamentals of Speech.
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Philosophy

Phl 201.	Problems of Philosophy.
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Music

Mus 201, 202, 203.	Introduction to Music and Its Literature.
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Art

AA 127.	Art Appreciation.
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Mathematics and Sciences

Mathematics

Mth 60	Elementary Algebra.
Mth 70	Elementary Geometry.
Mth 100	Intermediate Algebra.
Mth 101, 102, 103.	College Algebra, Trigonometry, Analytic Geometry.

Chemistry

Ch 104, 105, 106.	General Chemistry.
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General Science

GS 101, 102, 103.	Foundations of Biological Science.
GS 104, 105, 106.	Foundations of Physical Science.

Social Sciences

History

Hst 101, 102, 103.	History of Western Civilization.
Hst 201, 202, 203.	History of the United States.

Anthropology

Anth 101, 102, 103.	General Anthropology.
Anth 207, 208, 209.	Introduction to Cultural Anthropology.

Economics

Ec 201, 202, 203.	Principles of Economics.
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Psychology

Psy 201, 202, 203. General Psychology.

Sociology

Soc 104, 105, 106. General Sociology.

Political Science

PS 201, 202, 203. American Governments.

Social Science

SSc 111. Orientation.

LOWER DIVISION LIBERAL ARTS AND SCIENCES

Lower Division years of work in Liberal Arts and Sciences are unspecialized. Students completing two years of work and fulfilling all requirements may select a major in a specialized field by the end of the sophomore year.

For students who plan to complete work for a bachelor's degree, the two Lower Division years provide broad general education and a foundation for specialization during the junior and senior years in some field in the Liberal Arts and Sciences or in a professional or technical curriculum.

For students uncertain about their educational or professional goals, the Lower Division offers the opportunity to explore several fields of study to help determine special interests and aptitudes.

SUGGESTED ELECTIVES

Business Administration

BA 111, 112, 113. Constructive Accounting.

BA 121.	Introduction to Business and Industry.
BA 122.	Survey of Modern Industry.
BA 222.	Elements of Finance.
BA 256.	Business Law.

Theater Arts

TA 111, 112, 113.	Fundamentals of Acting.
TA 211, 212, 213.	Play Production.

Romance Languages

RL 107, 108, 109.	Second-Year Spanish.
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Health Education

HE 250.	Personal Health.*
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Physical Education

PE 180.	Physical Education.* (Men and Women)
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*Colleges of Oregon require one term of Personal Health and five terms of Physical Education.

For students who plan to complete no more than two years of college, the Lower Division offers a program suited to the needs of the individual, balancing cultural and vocational courses as preparation for intelligent and useful citizenship.

Freshman Year

	<u>Term</u>	<u>Hours</u>
Year sequence in any one of the three groups	9-12	
Year sequence in another of the three groups	9	
English Composition (Wr 111, 112, 113)	9	
Physical Education	2	
Personal Health	2	
Electives	14-17	
	<u>TOTAL</u>	<u>48</u>

<u>Sophomore Year</u>		<u>Term Hours</u>
Sophomore year sequence in one of the groups 9-12 begun in the freshman year		
Year sequence in the third group		9
Physical Education		3
Electives		<u>24-27</u>
TOTAL		48

PROFESSIONAL CURRICULA

The following are professional and semiprofessional freshman and sophomore year-course programs offered in the Lower Division at Clatsop County Community College. These professional and semiprofessional courses prepare for later specialization in the junior and senior years.

Providing the basis for the student to transfer to the professional school of his choice without loss of time, these professional and semiprofessional courses of study are closely coordinated with the professional schools within the Oregon State System of Higher Education.

Some of the following professional and semiprofessional programs at Clatsop County Community College, depending upon the purpose of the student, may be used to serve a specific vocational end in themselves. In any case, however, students are required to meet the same level of academic performances as are candidates for degrees.

Students planning to transfer to schools other than those within the State System of Higher Education upon completion of their professional or semiprofessional programs should check Lower Division courses and requirements by contacting the registrar of the institution to which they intend to transfer.

ARCHITECTURE AND APPLIED ARTS

	Freshman Year			Term Hours		
	F	W	S			
English Composition (Wr 111,112,113)	3	3	3			
Approved Mathematics Sequence	4	4	4			
Fundamentals of Speech (Sp 111)		3				
Principles of Economics (Ec 201,202)		3	3			
Approved Literature Sequence	3	3	3			
Personal Health (HE 250)	3					
Physical Education (PE 180)	1					
Electives	3		3			
	17	16	16			

ART

Freshman Year

English Composition (Wr 111,112,113)	3	3	3
Approved Social Science Sequence	3	3	3
Approved Literature Sequence	3	3	3
General Psychology (Psy 201,202,203)	3	3	3
General Sociology (Soc 204,205,206)	3	3	3
Personal Health	3		
Physical Education (PE 180)		1	1
Electives		2	2
	18	18	18

AGRICULTURE

Freshman Year

English Composition (Wr 111,112,113)	3	3	3
General Chemistry (Ch 104, 105, 106)	4	4	4
Approved Social Science Sequence	3		3

	Term Hours		
	F	W	S
Fundamentals of Speech (Sp 111)		3	
Approved Mathematics Sequence	4	4	4
Principles of Economics (Ec 201, 202, 203)	3	3	3
Personal Health (HE 250)	3		
Physical Education (PE 180)		<u>1</u>	<u>1</u>
	<u>20</u>	<u>18</u>	<u>18</u>

AGRICULTURAL ENGINEERING

Freshman Year

English Composition (Wr 111,112,113)	3	3	3
Approved Mathematics Sequence	4	4	4
General Chemistry (Ch 201, 202, 203)	4	4	4
Principles of Economics (Ec 201,203)	3		3
Fundamentals of Speech (Sp 111)		3	
Approved Social Science Sequence	3	3	3
Personal Health (HE 250)	3		
Physical Education (PE 180)		<u>1</u>	<u>1</u>
	<u>20</u>	<u>18</u>	<u>18</u>

BIOLOGY

Freshman Year

English Composition (Wr 111,112,113)	3	3	3
Approved Mathematics Sequence	4	4	4
Humanities or Social Science Sequence	3	3	3
General Biology (Bi 101, 102, 103)	3	3	3
General Psychology (Psy 201, 202)		3	3
Personal Health (HE 250)	3		
Physical Education (PE 180)		<u>1</u>	<u>1</u>
	<u>16</u>	<u>17</u>	<u>17</u>

BOTANY

Freshman Year	Term Hours		
	F	W	S
English Composition (Wr 111,112,113)	3	3	3
Group Requirements in Social Sciences or Humanities	3	3	3
General Chemistry (Ch 201, 202, 203)	4	4	4
Fundamentals of Speech (Sp 111)		3	
General Psychology (Psy 201, 202)		3	3
Personal Health (HE 250)	3		
Physical Education (PE 180)		1	1
Electives	<u>4</u>		<u>3</u>
	17	17	17

BUSINESS ADMINISTRATION

Freshman Year

English Composition (Wr 111,112,113)	3	3	3
Approved Mathematics Sequence	4	4	4
Constructive Accounting (BA 111, 112, 113)	3	3	3
Introduction to Business & Industry (BA 121)	3		
General Sociology (Soc 204, 205, 206)	3	3	3
Personal Health (HE 250)	3		
Physical Education (PE 180)		1	1
Electives	<u>18</u>	<u>3</u>	<u>3</u>
	18	17	17

Sophomore Year

History of the United States (Hst 201, 202, 203)	3	3	3
Fundamentals of Speech (Sp 111, 112, 113)	3	3	3
Principles of Economics (Ec 201, 202, 203)	3	3	3

	Term Hours		
	F	W	S
World Literature (Eng 107,108,109)	3	3	3
Approved Mathematics Sequence	4	4	4
Physical Education (PE 180)	<u>1</u>	<u>1</u>	<u>1</u>
	17	17	17

BUSINESS AND TECHNOLOGY

Freshman Year

Principles of Economics (Ec 201,202)		3	3
Fundamentals of Speech (Sp 111)		3	
English Composition (Wr 111,112,113)	3	3	3
Mathematics (Mth 60 or 100)	4		
Constructive Accounting (BA 111, 112, 113)	3	3	3
Introduction to Business & Industry (BA 121)	3		
General Psychology (Psy 201, 202)		3	3
Personal Health (HE 250)	3		
Physical Education (PE 180)		1	1
Electives			<u>3</u>
	<u>16</u>	<u>16</u>	<u>16</u>

CHEMISTRY

Freshman Year

Group Requirement in Humanities or Social Science	3	3	3
General Chemistry (Ch 104, 105, 106)	4	4	4
English Composition (Wr 111, 112, 113)	3	3	3
Approved Mathematics Sequence	4	4	4
Personal Health (HE 250)	3		
Physical Education (PE 180)		1	1
Electives		<u>2</u>	<u>2</u>
	<u>17</u>	<u>17</u>	<u>17</u>

ENGINEERING

(Chemical, Civil, Electrical, Industrial, Mechanical)

	Term Hours		
	F	W	S
Approved Mathematics Sequence	4	4	4
General Chemistry (Ch 104, 105, 106)	4	4	4
English Composition (Wr 111,112,113)	3	3	3
Social Science Sequence	3	3	3
Personal Health (HE 250)	3		
Physical Education (PE 180)		1	1
Electives	2	3	3
	<u>19</u>	<u>18</u>	<u>18</u>

FORESTRY

Freshman Year

Approved Mathematics Sequence	4	4	4
English Composition (Wr 111,112,113)	3	3	3
Approved History Sequence	3	3	3
General Chemistry (Ch 104, 105, 106)	4	4	4
Fundamentals of Speech (Sp 111)		3	
Personal Health (HE 250)	3		
Physical Education (PE 180)		1	1
Electives			3
	<u>17</u>	<u>18</u>	<u>18</u>

GEOLOGY

Freshman Year

Approved History Sequence	3	3	3
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	Term Hours		
	F	W	S
Approved Mathematics Sequence	4	4	4
English Composition (Wr 111,112,113)	3	3	3
General Chemistry (Ch 201, 202, 203)	4	4	4
Personal Health (HE 250)	3		
Physical Education (PE 180)		1	1
Electives		3	3
	<u>17</u>	<u>18</u>	<u>18</u>

HOME ECONOMICS

Freshman Year

Approved Social Science Sequence	3	3	3
General Chemistry (Ch 201,202,203)	4	4	4
English Composition (Wr 111,112,113)	3	3	3
Fundamentals of Speech (Sp 111)		3	
Approved Literature Sequence	3	3	3
General Sociology (Soc 204)	3		
Physical Education (PE 180)		1	1
Electives			3
	<u>17</u>	<u>18</u>	<u>18</u>

MATHEMATICS

Freshman Year

Group Requirement in Humanities or Social Science	3	3	3
Approved Mathematics Sequence	4	4	4
English Composition (Wr 111,112,113)	3	3	3
General Chemistry (Ch 201, 202, 203)	4	4	4
Personal Health (HE 250)	3		

	Term Hours		
	F	W	S
Physical Education		1	1
Electives		3	3
	<u>17</u>	<u>18</u>	<u>18</u>

PRE-DENTISTRY*

Freshman Year

Approved Science Sequence	3	3	3
English Composition (Wr 111,112,113)	3	3	3
Approved Mathematics Sequence	4	4	4
General Psychology (Psy 201, 202)		3	3
Principles of Economics (Ec 201, 202, 203)	3	3	3
Personal Health (HE 250)	3		
Physical Education (PE 180)		1	1
Electives	2		
	<u>18</u>	<u>17</u>	<u>17</u>

*Student must maintain 2.00 GPA for transfer.

PRE-NURSING*

Freshman Year

English Composition (Wr 111,112,113)	3	3	3
Approved Literature Sequence	3	3	3
General Chemistry (Ch 201, 202, 203)	4	4	4
Fundamentals of Speech (Sp 111)		3	
General Psychology (Psy 201, 202)		3	3
Personal Health (HE 250)	3		
Physical Education (PE 180)		1	1
Electives	3		
	<u>16</u>	<u>17</u>	<u>17</u>

*Student must maintain 2.00 GPA for transfer.
 Nutrition 205 or Home Economics 225 can be
 taken at Portland State College, summers.

PRE-PHARMACY*

Freshman Year	Term Hours		
	F	W	S
English Composition (Wr 111,112,113)	3	3	3
General Chemistry (Ch 104, 105, 106)	4	4	4
Mathematics (Mth 101, 102, 103)	4	4	4
Biology (GS 101, 102, 103)	3	3	3
Principles of Economics (Ec 201,202)		3	3
Electives	3		
	<u>17</u>	<u>17</u>	<u>17</u>

*Student must maintain 2.00 GPA for transfer.

PRE-MEDICINE*

Freshman Year			
English Composition (Wr 111,112,113)	3	3	3
General Chemistry (Ch 104, 105, 106)	4	4	4
General Psychology (Psy 201, 202)		3	3
Fundamentals of Speech (Sp 111)		3	
Mathematics (Mth 101, 102, 103)	4	4	4
Personal Health (HE 250)	3		
Physical Education (PE 180)		1	1
Electives	2		3
	<u>16</u>	<u>18</u>	<u>18</u>

*Student must maintain 2.00 GPA for transfer.

PRE-VETERINARY

	Freshman Year			Term Hours		
	F	W	S			
English Composition (Wr 111,112,113)	3	3	3			
General Chemistry (Ch 201, 202, 203)	4	4	4			
Approved Mathematics Sequence	4	4	4			
Approved Literature or Social Science Sequence	3	3	3			
Personal Health (HE 250)	3					
Physical Education (PE 180)		1	1			
Electives		3	3			
	<u>17</u>	<u>18</u>	<u>18</u>			

PRE-LAW*

Freshman Year						
English Composition (Wr 111,112,113)	3	3	3			
Constructive Accounting (BA 111,112, 113)	3	3	3			
Approved Social Science Sequence	3	3	3			
General Psychology (Psy 201, 202)		3	3			
General Sociology (Soc 104,105,106)	3	3	3			
Personal Health (HE 250)	3					
Physical Education (PE 180)		1	1			
Electives	2					
	<u>17</u>	<u>16</u>	<u>16</u>			

Sophomore Year

Survey of English Literature (Eng 101, 102, 103)	3	3	3			
Principles of Economics (Ec 201,202 203)	3	3	3			
Approved Social Science Sequence	3	3	3			

	Term Hours		
	F	W	S
American Governments (PS 201,202,203)	3	3	3
Approved Mathematics Sequence	4	4	4
Physical Education (PE 180)	<u>1</u>	<u>1</u>	<u>1</u>
	17	17	17

*Student must have a 2.00 GPA for transfer.

LOWER DIVISION LIBERAL ARTS AND SCIENCES

Course Descriptions

HUMANITIES

Eng 101, 102, 103. Survey of English Literature.

Study of the principle works of English literature based on reading selected to represent great writers, literary forms, and significant currents of thought. Provides both an introduction to literature and a background that will be useful in the study of other literatures and other fields of cultural history. Offered in alternate years. 3 hours each term.

Eng 107, 108, 109. World Literature.

A sequence in narrative prose, drama, and poetry. Complete books are studied so the student may be familiar with some masterpieces in western world literature. Offered in alternate years. 3 hours each term.

Eng 201, 202, 203. Shakespeare.

Study of the important plays--comedies, histories, tragedies. Required for majors. Offered in alternate years. 3 hours each term.

Wr 111, 112, 113. English Composition.

The principles and forms of composition, including the library research paper; effective expression of ideas through impromptu and prepared essays on topics of some significance, with special attention to organization. Mastery of the basic mechanics of English expression is presupposed; students who have deficiencies in fundamental language skills or

insufficient preparation for college level work in careful written English may be required to register for 1 hour of Writing Laboratory in addition to Wr 111; Wr 111 is a prerequisite for Wr 112, and Wr 112 is a prerequisite for Wr 113. 3 hours each term.

Wr 211, 212, 213. Advanced Writing.

Fall term, exposition. Winter and spring terms, practice in a variety of forms, including fiction, essays, and criticism. Prerequisite: Wr 111, 112, 113. 3 hours each term.

Sp 111, 112, 113. Fundamentals of Speech.

Projects in extempore speaking. Emphasis on content and organization, but attention also to poise, effective delivery and command of the language. 3 hours each term.

Phl 201. Problems of Philosophy.

An introduction to some of the persistent problems and great systems of philosophy through reading and discussion of selected source materials. 3 hours.

Mus 201, 202, 203. Introduction to Music and Its Literature.

Mus 201: An introduction to music literature through the study of elements and organizing principles as they related to music of all periods. Stress on listening to music that is popular in the concert hall. Required as a general education course for prospective secondary teachers. Elective to others. Mus 202: Selected masterpieces from

Haydn to the late nineteenth century. Special emphasis placed on understanding the musical styles of the period. Required for music minors. Elective to others. Mus 201 is not a prerequisite. Mus 203: The old and new in music literature. Music of Bach, Handel and their predecessors; and music of the contemporary period, starting with the impressionist composers. Special unit on jazz. Mus 201 and 202 are not prerequisites. 3 hours each term.

A 127. Art Appreciation.

A course exploring the cultural and historic significance of graphic and plastic art products. Field trip, lecture, projected and display materials are used. 3 hours.

MATHEMATICS AND SCIENCES

Mth 60. Elementary Algebra.

For students entering with less than one year of high school algebra. Credit not counted toward graduation. 4 hours.

Mth 70. Elementary Geometry.

For students entering without high school geometry. Credit not counted toward graduation. 4 hours.

Mth 100. Intermediate Algebra.

For students with only one year of high school algebra. Prerequisite: Mth 60 or equivalent. 4 hours.

Mth 101. College Algebra.

Review of high school algebra with emphasis on number system, logarithms, progressions, binominal series, theory of equations, determinants. Prerequisite: Mth 100 or equivalent. 4 hours.

Mth 102. Trigonometry.

Trigonometric functions for general angles, solution of triangles, addition formulas, trigonometric equations, graphs, complex numbers, and DeMoivre's theorem. Prerequisite: Mth 101 or equivalent. 4 hours.

Mth 103. Analytic Geometry.

The straight line, circle, conics, translation and rotation of axes, parametric equations, and polar coordinates. Planes and lines in three dimensions. Prerequisite: Mth 102 or equivalent. 4 hours.

Ch 104, 105, 106. General Chemistry.

For students majoring in medical technology, pre-dental, nursing, and liberal arts. Three lectures; one 3-hour lab period. 4 hours each term.

GS 101, 102, 103. Foundations of Biological Science.

The fundamental principles of life as they apply to both plants and animals. For general students and those majoring in fields other than biology. If taken after courses with similar material have been completed, credit will be restricted. Two lectures; one 2-hour lab period. 3 hours each term.

GS 104, 105, 106. Foundations of Physical Science.

Fundamental principles of physics, chemistry, astronomy and geology; development and application of the scientific method. For students majoring in fields other than the physical sciences, who wish a broad view of the principles of several of the physical sciences.

If taken after courses with similar materials have been completed, credit is restricted. Two lectures; one 2-hour laboratory period. 3 hours each term.

Ph 101, 102, 103. Essentials of Physics.

Fundamental principles of physics for students not majoring in science. Prerequisite: Mth 100 or equivalent. Two lectures; one 3-hour laboratory period.

Ph 161. Essentials of Photography.

For students interested in photography as an avocation. Elementary work with land camera; developing, printing, enlarging. 2 hours.

SOCIAL SCIENCES

Hst 101, 102, 103. History of Western Civilization.

The development of western civilization from early beginnings to the present time; political, social and cultural factors; present conditions and problems. The three terms constitute a sequence but may be taken separately. 3 hours each term.

Hst 201, 202, 203. History of the United States.

From colonial times to the present day. 3 hours each term.

Anth 101, 102, 103. General Anthropology.

Fall: Man as a living organism; biological evolution; the human cycle. Winter: Evolution of man; human races, nature and problems. Spring: The development of culture;

organization of culture; man, participant in and observer of culture. 3 hours each term.

Anth 207, 208, 209. Introduction to Cultural Anthropology.

The meaning of culture; its significance for human beings; its diverse forms and degrees of elaboration among different groups of men; its process of growth and expansion. 3 hours each term.

Ec 201, 202, 203. Principles of Economics.

Social phenomena due to the wealth-getting and wealth-using activities of man; all other phases of man's life insofar as they affect his social activity in this respect; wealth, capital and income; driving forces of economic life; the industries of production; money; the interaction of supply and demand; the interpretation of the meaning of the law of supply and demand; consumption; capitalism and alternative economic systems. 3 hours each term.

Psy 201, 202, 203. General Psychology.

Basic principles and theories of behavior. Discussion of individual differences, intelligence, aptitude, methods of psychological measurement and testing, drives and motives, emotions and reactions to stress, perception, learning, thinking, reasoning, personality; the response mechanism, communication processes, attitudes, and social processes, frontiers of psychology. 3 hours each term.

Soc 104, 105, 106. General Sociology.

Analysis of social organization and culture; human nature, social changes and movements as affected by culture; biological and physical environmental factors; a survey of the various social problems as well as the methods of investigation. 3 hours each term.

PS 201, 202, 203. American Governments.

Fall and Winter: National Government.
Spring: State and local governments.
Offered 1962-1963. 3 hours each term.

SSc 111. Orientation.

A course in effective adjustments to college and social needs. Effective means and methods of study; use of the library; time budgeting; importance and spacing of reviews; the amount and type of recreation suitable; social adjustments for happy and effective living; means and methods of modifying personality deficiencies. Recommended for all first year students. 3 hours.

COURSE DESCRIPTIONS FOR SUGGESTED ELECTIVES

BA 111, 112, 113. Constructive Accounting.

Technique of account construction; preparation of financial statements. Application of accounting principles to practical business problems. Required of majors, prerequisite to advanced work in business. 3 hours.

BA 121. Introduction to Business & Industry.

Survey of business organization, operation and management intended to orient the student in business and industry. 3 hours.

BA 122. Survey of Modern Industry.

Representative industries within the United States, covering development, structure, competitive conditions, basic processes, and services. 3 hours.

BA 222. Elements of Finance.

The financial problems of corporations. Organization of corporations; how they obtain long-term funds; management of working capital; distribution of securities. Required of all majors. Prerequisite: BA 111, 112, 113. 3 hours.

BA 256. Business Law.

Application of fundamental legal principles to typical business situations illustrated by selected cases; formulation, interpretation, discharge of contracts; law of agency,

negotiable instruments, consideration, delivery rights, liabilities of parties, real property, sales, bailments, chattel mortgages. 3 hours.

TA 111, 112, 113. Fundamentals of Acting.

This sequence is concerned with both the method and the techniques of the actor, in addition to classroom presentation not more than two hours of laboratory each week are required. Laboratory hours by appointment. Each term is a prerequisite for the following one. Students are urged to present themselves in public performance during the sequence. 2 hours each term.

TA 211, 212, 213. Play Production.

Study of and practice in the techniques of mounting various styles of production for presentation. Basic principles and techniques in stage and costume design and construction are covered, as well as lighting and stage management. Laboratory sessions are required. 3 hours each term.

RL 107, 108, 109. Second-Year Spanish.

4 hours each term.

HE 250. Personal Health.

Basic scientific knowledge for healthful living; relation of the health of individuals to family and community welfare and to national vitality and progress; fundamental factors involved in intelligent behavior. 2 hours.

PE 180. Physical Education.

Instruction is given in skills, techniques, history and rules of the following sports

and activities: Rythms. Folk and Square Dance, Social Dance, Modern Dance.

Gymnastics and Tumbling. Stunts and Tumbling, Gymnastics.

Aquatics. Beginning Swimming, Intermediate Swimming, Advanced Swimming, Lifesaving.

Individual and Dual Sports. Badminton, Tennis, Archery, Handball, Wrestling, Track and Field, Golf, Recreational Games.

Team Sports. Women--Basketball, Volleyball, Speedball, Soccer, Softball. Men--Basketball, Football, Softball, Soccer, Touch Football, and Volleyball. 1 hour each term.

S E C T I O N B

CLATSOP COUNTY COMMUNITY COLLEGE

ENGINEERING TECHNOLOGY DIVISION

M A J O R A R E A S

Electronic Technology

Electronic Drafting (Option)

Civil-Structural Technology

Civil-Structural Drafting (Option)

Highway Engineering Technology

Drafting Technology

One or two-year training for occupational areas essential to the national defense.

VOCATIONAL-TECHNICAL EDUCATION

Minimum Graduation Requirements

ASSOCIATE DEGREE IN APPLIED SCIENCE

OR

DIPLOMA IN APPLIED SCIENCE

FOR

E N G I N E E R I N G T E C H N O L O G Y

Basic Program 33 Units

Communication Skills 12 Units

Mathematics 11 Units

Science 8 Units

Related Subjects 2 Units

Major Technical Field Program 46 Units

Electives Limited to Technical Field . 11 Units

TOTAL REQUIRED 90 Units

Typical Sequence of Courses

ELECTRONIC ENGINEERING TECHNICIAN CURRICULUM

		First Term		
Hours/Week			Term	
<u>Class</u>	<u>Lab</u>	<u>Course Title</u>	<u>Units</u>	<u>*Hours</u>
3	2	Applied Physics I	4	60
3		Communication Skills I	3	36
	4	Drafting I	2	48
	2	Engineering Probs. I	1	24
3		Technical Mathematics I	3	36
3	2	Electrical Theory (DC)	4	60
TOTAL			17	

Second Term				
3	2	Applied Physics II	4	60
3		Communication Skills II	3	36
	4	Electrical Drafting	2	48
	2	Engineering Probs. II	1	24
3		Technical Math. II	3	36
3	2	Electrical Theory (AC)	4	60
TOTAL			17	

Third Term				
	4	Practical Desc. Geom.	2	48
3		Technical Math. III	3	36
3		Electrical Circuits	3	36
	6	Elec. Circuits Lab	2	72
3		Vacuum Tube & Transis- tor Analysis	3	36
	3	Vacuum Tube & Transis- tor Analysis Lab	1	36
TOTAL			14	

*Computed on 12 weeks.

		Fourth Term		
Hours/Week		<u>Course Titles</u>	Term	
<u>Class</u>	<u>Lab</u>		<u>Units</u>	<u>*Hours</u>
2		Industrial Economics	2	24
3		Elec. Mathematics I	3	36
2		Oscillator Circuits & Design	2	24
	6	Oscillator Laboratory	2	72
1	3	Servo Systems	2	48
2	3	Wave Generation & Shaping	3	60
TOTAL			14	

Fifth Term

3		Amplifier Circuits and Design	3	36
	6	Amplifier Circuits Lab	2	72
2	3	Industrial Electronics I	3	60
2	3	Industrial Television I	3	60
3		Elec. Data Processing	3	36
TOTAL			14	

Sixth Term

2	3	Adv. Electronic Circ.	3	60
3		Automation Systems	3	36
1	2	Industrial Television II	1	36
3		Industrial Electronics II	3	36
	3	Industrial Elec. Lab II	1	36
2	3	Microwaves	3	60
TOTAL			14	

*Computed on 12 weeks.

Typical Sequence of Courses

CIVIL-STRUCTURAL ENGINEERING TECHNICIAN CURRICULUM

		First Term		
Hours/Week			Term	
<u>Class</u>	<u>Lab</u>	<u>Course Title</u>	<u>Units</u>	<u>Hours</u>
3	2	Applied Physics I	4	60
3		Communication Skills I	3	36
	4	Drafting I	2	48
	2	Engineering Problems I	1	24
1	4	Plane Surveying I	3	60
3		Technical Mathematics I	<u>3</u>	36
		TOTAL	16	
Second Term				
3	2	Applied Physics II	4	60
3		Communication Skills II	3	36
	4	Drafting II	2	48
	2	Engineering Problems II	1	24
1	4	Plane Surveying II	3	60
3		Technical Mathematics II	<u>3</u>	36
		TOTAL	16	
Third Term				
2	3	Applied Mechanics I	3	60
	4	Descriptive Geometry	2	48
1	4	Surveying Computations	3	60
2		Strength of Materials I	2	24
	3	Materials Laboratory I	1	36
3		Technical Mathematics III	<u>3</u>	
		TOTAL	14	

Typical Sequence of Courses

HIGHWAY ENGINEERING TECHNICIAN CURRICULUM

Hours/Week		First Term		
<u>Class</u>	<u>Lab</u>	<u>Course Title</u>	<u>Units</u>	<u>Term Hours</u>
3	2	Applied Physics	4	60
3		Communication Skills I	3	36
	4	Drafting I	2	48
	2	Engineering Problems I	1	24
1	4	Plane Surveying I	3	60
3		Technical Mathematics I	<u>3</u>	36
		TOTAL	16	

Second Term				
3	2	Applied Physics	4	60
3		Communication Skills II	3	36
	4	Drafting II	2	48
	2	Engineering Problems II	1	24
1	4	Plane Surveying II	3	60
3		Technical Math. II	<u>3</u>	36
			16	

Third Term				
2	3	Applied Mechanics I	3	60
	4	Descriptive Geometry	2	48
2		Strength of Materials I	2	24
	3	Materials Laboratory I	1	36
3		Technical Math. III	3	36
1	4	Surveying Computations	<u>3</u>	60
		TOTAL	14	

Typical Sequence of Courses

DRAFTING TECHNOLOGY

Hours/Week		First Term			Term	
<u>Class</u>	<u>Lab</u>	<u>Course Title</u>	<u>Units</u>		<u>Hours</u>	
	4	Drafting I	2		48	
3		Mathematics I	3		36	
3	2	Practical Physics	4		60	
1	6	Intro. to Fabrication				
		Practice	3		84	
3		Communication Skills I	3		36	
2		Industrial Economics	2		24	
		TOTAL	17			
Second Term						
	4	Drafting II	2		48	
3		Mathematics II	3		36	
3	2	Practical Physics	4		60	
	9	Project Drafting	3		108	
3		Communication Skills II	3		36	
		TOTAL	15			
Third Term						
3		Adv. Drafting Problems	3		36	
3	2	Practical Physics	4		60	
	8	Project Drafting	3		96	
3		Technical Report Writing	3		36	
	4	Mechanical Drafting	2		48	
2		Employer-Employee				
		Relations	2		24	
		TOTAL	17			

		Fourth Term		
Hours/Week			Term	
<u>Class</u>	<u>Lab</u>	<u>Course Title</u>	<u>Units</u>	<u>Hours</u>
3		Technical Mathematics I	3	36
3	2	Applied Physics I	4	60
	2	Engineering Problems I	1	24
	5	Adv. Machine Drafting I	2	60
	4	Electrical Drafting	2	48
3		Intro. to Specifications	3	36
3		Industrial Safety	<u>3</u>	36
TOTAL			18	

Fifth Term				
3		Technical Mathematics II	3	36
3	2	Applied Physics II	4	60
	2	Engineering Problems II	1	24
	5	Adv. Machine Drafting II	2	60
3	2	Production Plan. & Prac.	4	60
2	3	Metals Application Treatment and Testing	<u>3</u>	60
TOTAL			17	

Sixth Term				
3		Technical Mathematics III	3	36
3	2	Applied Physics III	4	60
	5	Adv. Machine Drafting III	2	60
	4	Technical Illustration	2	48
	4	Architectural Drawing	2	48
	4	Structural Drafting	<u>2</u>	48
TOTAL			15	

Typical Sequence of Courses

ELECTRONIC-ELECTRICAL DRAFTING OPTION

S E C O N D Y E A R

Hours/Week		Fourth Term	Term	
<u>Class</u>	<u>Lab</u>		<u>Units</u>	<u>Hours</u>
3		Intro. to Specifications	3	36
3		Industrial Safety	3	36
2		Industrial Economics	2	24
1	6	Intro. to Fabrication Prac- tice	3	84
3		Electronic-Elec. Stan- dards	3	36
1	6	Scales and Graphs	3	84
		TOTAL	17	

Fifth Term

3	2	Production Planning & Practice	4	60
2	3	Metals Application Treat- ment and Testing	3	60
1	6	Control Layout Systems	3	84
2		Cost Computations	2	24
	6	Cost Computations Lab	2	72
		TOTAL	14	

Sixth Term

2		Employer-Employee Rela- tions	2	24
	4	Technical Illustration	2	48
1	8	Project Drafting	4	108
	6	Light Sheet Metal Draft.	2	72
	3	Pictorial Drafting	1	36
		TOTAL	11	

Typical Sequence of Courses

CIVIL-STRUCTURAL DRAFTING OPTION

S E C O N D Y E A R

Hours/Week		Fourth Term		
<u>Class</u>	<u>Lab</u>	<u>Course Title</u>	<u>Units</u>	<u>Term Hours</u>
3		Intro. to Specifications	3	36
3		Industrial Safety	3	36
2		Industrial Economics	2	24
2		Construction Standards	2	24
	6	Road & Hwy. Drafting	2	72
1	7	Mapping & Platting	3	96
		TOTAL	15	

Fifth Term				
3	2	Production Planning & Practice	4	60
2	3	Metals Application Treatment and Testing	3	60
2	6	Industrial Construction Drafting	4	96
2		Construction Cost Comp.	2	24
	5	Construction Cost Comp. Laboratory	2	60
		TOTAL	15	

Sixth Term				
2		Employer-Employee Relations	2	24
	4	Technical Illustration	2	48
2	6	Industrial Cons. Draft.	4	96
	4	Structural Drafting	2	48
3	3	Photo Interpret. and Mapping	4	72
		TOTAL	14	

ENGINEERING TECHNOLOGY COURSE DESCRIPTIONS

6.216R -- Advanced Electronic Circuits.

A course designed to simulate problems to be faced by the student when working in industry. Covers six electronic areas including computers, communications, industrial controls, electronics, microwaves, and radar. Class meetings involve overview of each area and study of current problems and opportunities. Lab involves construction, testing, and reporting performance of assigned circuits. 3 Term Units. (2 Class--3 Lab Hrs/Wk)

Prerequisite: Sixth term standing or approval of department head.

6.214R -- Amplifier Circuits and Design.

A continuation of Oscillator Circuits and Design (6.212R). Covers the application of vacuum tubes and transistors in practical amplifier circuits. Analyzes the vacuum-tube amplifier into its basic and equivalent circuit. Includes load-lines, distortion, and pentode and beam-power tube, considerations. Analyzes transistor amplifiers in various circuit configurations and covers biasing methods. Also includes transformer analysis, transformer-coupled amplifiers, and R-C coupled amplifiers. Special amplifiers using vacuum tubes and transistors are studied. Include push-pull circuit analysis and phase inversion; Class C amplifier analysis, and high-frequency amplifiers. 3 Term Units. (3 Class Hrs/Wk)

Prerequisite: Fifth term standing or approval of department head.

6.215R -- Amplifier Circuits and Design Lab.

The practical application of the theory studied in Amplifier Circuits & Design (6.214R). Involves the design, construction, and testing of various types of vacuum-tube and transistor amplifiers employing direct, transformer, and R-C coupling. Several push-pull circuits utilizing different types of phase inverters are built and tested and the principle of complementary symmetry is demonstrated in the operation of transistors in push-pull. Class-C power amplifiers are constructed and adjusted for proper operation and different types of high-frequency amplifiers are also built and tested. 2 Term Units. (6 Lab Hrs/Wk)

Prerequisite: Fifth term standing or approval of department head.

1.362R -- Applied Physics I.

This course in applied physics is on the technician level, and its purpose is to acquaint students with physical laws and theories and mechanical principles, including mechanics of measurement, properties and structure of matter, solids, liquids and gases, study of simple machines, work, power, and energy. Laboratory time is provided for demonstrations and experiments to help clarify the principles and procedures covered in class. 4 Term Units. (3 Class--2 Lab Hrs/Wk)

Prerequisite: Technical Mathematics 1.260 or equivalent. May be taken concurrently.

1.364R -- Applied Physics II.

This is a course in applied physics on the technician level, covering the principles of heat, light, and sound including the study of temperature and the effects of heat, heat and change of state, heat transfer, heat engines refrigeration, air conditioning, sound, application of sound, and nature of light. Laboratory time is provided for demonstrations and experiments to help clarify the principles and procedures covered in class. 4 Term Units. (3 Class--2 Lab Hrs/Wk)

Prerequisite: Applied Physics I, 1.362R, or equivalent.

6.244 -- Automation Systems.

A course designed to give the student a wealth of professional "know-how" in the techniques of automation. Introduces the basic concepts of automation and covers automatic controls, pneumatic control devices, hydraulic control devices, and electronic control devices. The application of automation is studied from examples in the areas of materials handling and assembling, production of metals, metal casting processes, mechanical working of metals, pressworking of metals, metal cutting operations, heat treating of metals, metal joining operations, and inspection and quality control.

3 Term Units. (3 Class Hrs/Wk)

Prerequisite: Sixth term standing or approval of department head.

1.100 -- Communication Skills I.

This course is designed to improve the student's speaking and writing skills to help him grow in language power through the development of correct habits of careful, forceful expression. The course material covering the four basic skills--reading, speaking, writing, and listening--has been correlated so that the methods used in these four areas are complementary parts of the communications process. The practical phase of communication problems is kept in the foreground and every effort is made to lead the student through industrial and business experiences that are thoroughly practical in nature. Problems in the field of oral communication include individual speech analysis, business and social conversation, group speaking in business and industry, information talks, demonstrations, explanations, etc. Cultivating the student's powers of analysis and evaluation of contemporary communication is an important objective in this course; therefore, contemporary speeches, books, magazines, and newspapers are the source materials for oral and written assignments. Problems in outlining, note-taking and grammar are considered. 3 Term Units. (3 Class Hrs/Wk)

Prerequisite: High school English or equivalent.

1.102 -- Communication Skills II.

This course presents the next steps in the process of improving the student's speaking, reading, writing, and listening skills. Problems in these areas are on a graduated basis and have been so selected as to help the student proceed in an orderly fashion to achieve greater competency of expression and a stronger sense of security in communicating his ideas and thoughts to others. Practice is provided for the student in developing reports; giving talks; taking part in conferences; reading, analyzing and discussing both general and technical periodicals; and handling representative forms of business writing. The general objective is to provide a graduated scale of activities which will help. 3 Term Units. (3 Class Hrs/Wk)

Prerequisite: Communication Skills 1.100 or equivalent.

2.101 -- Drafting I.

This is a fundamental course in drafting, designed to give the student a basic understanding of drawing techniques. Emphasis will be placed on the application of drawing instruments, standard orthographic projection, layout procedures, and ASA approved lettering techniques. Drawing techniques such as geometric construction, selection of views, sectional and auxiliary views, revolutions, threads, and standard dimensioning practices will be covered. 2 Term Units. (4 Lab Hrs/Wk)

Prerequisite: High school algebra or equivalent.

6.204R -- Electrical Circuits.

A continuation of Electrical Theory (AC) (6.202R), with an emphasis on the analysis of the characteristics of complex waveform circuits. Covers passive filter networks, bi-directional waveforms, complex waveform analysis of simple circuits, waveform analysis of series R-L circuits, and waveform analysis of combined networks. 3 Term Units. (3 Class Hrs/Wk)

Prerequisite: Third term standing or approval of department head.

6.205R -- Electrical Circuits Laboratory.

Practical application of the theory studied in Electrical Circuits (6.204R). Involves the construction and testing of passive filter networks including the constant k, the series m-derived, and the shunt m-derived types. Response of simple circuits involving diodes, resistance, inductance, and capacitance to square-wave, triangular-wave, saw-tooth-wave, and rectangular-wave pulses is analyzed. Various R-L-C combinations are designed and tested for low and high-frequency response, rise and fall times are measured, and integrator and differentiator circuits are constructed and analyzed. 2 Term Units. (6 Lab Hrs/Wk)

Prerequisite: Third term standing or approval of department head.

2.103 -- Electrical Drafting.

This course covers the techniques required for the electrical and electronic fields; it includes charts, graphs, chassis layout, schematic and pictorial wiring diagrams, routing diagrams (power distribution, lighting, conduit and ducts, underground wiring and ducts), and location drawings. Standard schematics, such as motor starters, annunciators, AM receivers, and other typical industrial circuits will be covered. ASA and EEIA approved symbols will be used. 2 Term Units. (4 Lab Hrs/Wk)

Prerequisite: Drafting 2.101, or equivalent.

1.268 -- Electrical Mathematics I.

This is an applied course in mathematics for electronic-electrical technicians and includes an introduction to calculus, covering graphical methods, differentiation, and integration with direct application to electronic and electrical circuits. 2 Term Units. (3 Class Hrs/Wk)

Prerequisite: Technical Mathematics 1.266 or equivalent.

6.200R -- Electrical Theory (DC).

Presents an introduction to electronics on the basis of direct currents with an emphasis on contemporary techniques as a supplement to basic concepts. Covers the principles of electron physics, unidirectional current and factors affecting its magnitude, series-circuit analysis, parallel-circuit analysis, series-

parallel circuit analysis, complex unidirectional--current circuits, the phenomena of magnetism and electromagnetism, inductance and its characteristics, characteristics of capacitance, and electrical measurement instruments. 4 Term Units. (3 Class--2 Lab Hrs/Wk)

Prerequisite: High school algebra or equivalent.

6.202R -- Electrical Theory (AC).

A continuation of Electrical Theory (DC) (6.200R) on the basis of alternating currents with an emphasis on contemporary techniques as a supplement to basic concepts. Covers the analysis of the sine wave, series circuits with a parallel resonance, the non-resonant and the resonant transformer and attenuators and pads. 4 Term Units. (3 Class--2 Lab Hrs/Wk)

Prerequisite: Second term standing or approval of department head.

1.106 -- Engineering Problems I.

This course of study in engineering problems is one in which the student is instructed in the development of accurate, effective and efficient work and study habits. The course is intended to train the student to organize his analysis and record it in clear, concise form so that they can be interpreted. 1 Term Units. (2 Lab Hrs/Wk)

Prerequisite: One year of high school algebra or equivalent.

1.108 -- Engineering Problems II.

This course aims to develop the skill of gathering together and sorting research results and problem solving records into logical summation. Mathematical and graphical analysis of data will be emphasized in the presentation of information in the report. 1 Term Unit. (2 Lab Hrs/Wk)

Prerequisite: Engineering Problems 1.106.

1.506 -- Industrial Economics.

Industrial Economics deals with the principles involved in the operation of the American economic system. The role of business and industry in the total economy is studied. Basic economic principles are applied to the relationship of employer and employee. Topics considered include historic trends, business organization, prices and competition, imperfect competition and monopoly, price levels, business cycles, taxation, labor unions, management associations, labor-management relations, labor legislations, and social and private security. 2 Term Units. (2 Class Hrs/Wk)

6.218R -- Industrial Electronics I.

An introductory class and laboratory course covering the principles and applications of electronics in industry. Involves review of the principles of D-C motors and generators, and covers D-C motor controls with emphasis on electronic controls. Also covers relays and

time-delay circuits; industrial photo-electric control and typical applications; electronic power-control with saturable-core reactors and the amplidyne; and electronic control of welding. 3 Term Units. (2 Class--3 Lab Hrs/Wk)

Prerequisite: Fifth term standing or approval of department head.

6.246 -- Industrial Electronics II.

A continuation of Industrial Electronics I (6.218R), with emphasis on A-C principles and applications in industry. Covers alternating current characteristics, generation of A-C, vector diagram analysis, properties of electric circuits, and graphical representation of resistance, reactance, and impedance. Single-phase circuits are analyzed in terms of power factor, and three-phase wye and delta combinations are studied. Also included are transformers and regulators, alternating-current generators, polyphase induction motors, synchronous motors and self-synchronous devices, single-phase motors, circuit-protective and switching equipment, electrical instruments and electrical measurement. 3 Term Units. (3 Class Hrs/Wk)

Prerequisite: Sixth term standing or approval of department head.

6.247 -- Industrial Electronics Lab II.

The practical application of the theory studied in Industrial Electronics II. Alternating-current theory and principles are verified by the construc-

tion and testing of circuits involving series resistance, inductance, and capacitance. Phase-angle, reactance, and impedance are calculated and checked, and vector diagrams are drawn to show current and voltage relationships. Three-phase transformers are wired in various delat-wye combinations and output voltages are calculated and verified. Small transformers are designed to deliver specified outputs. Alternating current generators, polyphase induction motors, synchronous motors, selsyn transmitters and receivers, and single-phase motors of all types are disassembled and their construction studied. Various circuit-protective and switching equipment are connected from a test panel to motors and tested. All types of electrical measuring equipment are tested by application and a D-C, A-C vacuum tube voltmeter is constructed and tested. 1 Term Unit. (3 Lab Hrs/Wk)

Prerequisite: Sixth term standing or approval of department head.

6.228 -- Industrial Television I.

A theory and lab course designed to cover television systems, scanning and synchronization, composite video signal, frequency-modulation, television receivers and monitors, picture tubes, power supplies, video amplification, practical design of video amplifiers, brightness-control and D-C reinsection video detection, automatic gain-control and sync-separation, and deflection oscillator and amplifier circuits. 3 Term Units. (2 Class--3 Lab Hrs/Wk)

Prerequisite: Fifth term standing or approval of department head.

6.235 -- Industrial Television II.

A theory and lab course covering closed-circuit television systems, picture transmission, scanning process and the composite signal, camera tubes and circuits, camera video amplifier systems, camera sync and deflection generators, and several types of commercial industrial cameras with emphasis on circuit analysis, set-up procedure, operation, and adjustment. 1 Term Unit. (1 Class-- 2 Lab Hrs/Wk)

Prerequisite: Sixth term standing or approval of department head.

6.212R -- Oscillator Circuits and Design.

A continuation of Vacuum Tube and Transistor Analysis (6.210R). Involves the study of single-phase rectifier circuits and filters with calculation of the ripple factor. Introduces the fundamental feedback equation and covers positive and negative feedback. Various types of feedback oscillators including the Hartley and the Colpitts, are analyzed. Covers negative-resistance oscillators including various multivibrator circuits. The principles of AM and FM modulation and detection are studied and the theory and application of the cathode-ray oscilloscope is included. 3 Term Units. (2 Class Hrs/Wk)

Prerequisite: Fourth term standing or approval of department head.

6.213R -- Oscillator Circuits and Design Lab.

Practical application of the theory studied in Oscillator Circuits and Design (6.212R). Involves the testing of half-wave and full-wave single-phase rectifier circuits and measurement of the D-C output and ripple-voltage. Includes the construction and testing of Hartley, Colpitts, Armstrong, electron-coupled crystal, tri-tet, phase-shift, Wein-bridge, and other types of feed-back and negative-resistance oscillators. Grid, cathode, screen and plate AM modulation are tested and checked for percentage by means of an oscilloscope. The reactance-tube modulator is constructed and tested for FM modulation. The cathode-ray oscilloscope circuits are analyzed. Frequency-comparisons are made with Lissajous' patterns and Z-axis modulation. Applications and proper techniques for use of the oscilloscope are also included. 2 Term Units. (6 Lab Hrs/Wk)

Prerequisite: Fourth term standing or approval of department head.

1.272 -- Practical Descriptive Geometry.

This course gives a brief review of advanced drafting problems and takes the student further into the field of descriptive geometry principles. In the production of detailed drawing from assembly drawing the principles of Descriptive Geometry are necessary to the skilled craftsman. 2 Term Units. (4 Lab Hrs/Wk)

Prerequisites: Third term standing or approval of department head.

1.260 -- Technical Mathematics I.

This is an applied course in mathematics on the technician level, covering the slide rule, tables and interpolation, additional applications in geometry, a review of fundamental algebraic operations, systems of linear equations, functions and graphs, advanced applications of exponents and radicals, and quadratic equations in one unknown. 3 Term Units. (3 Class Hrs/Wk)

Prerequisites: High school algebra or equivalent.

1.262 -- Technical Mathematics II.

This is an applied course in mathematics on the technician level, including logarithms, right and oblique triangle problem solving, trigonometric applications and review, vectors, trigonometric formulae, identities and equations and graphs of trigonometric functions. 3 Term Units. (3 Class Hrs/Wk)

Prerequisite: Technical Mathematics 1.260 or equivalent.

1.266 -- Technical Mathematics III.

This is an applied course in mathematics on the technician level, covering simultaneous quadratic equations, ration and proportion, binomial theorem, arithmetic and geometric progressions,

mathematics investment, exponential functions, complex notation and vector algebra. 3 Term Units. (3 Class Hrs/Wk)

Prerequisite: Technical Mathematics 1.262 or equivalent.

6.210R -- Vacuum Tube and Transistor Analysis.

An introductory course to the analysis of the electrical characteristics of vacuum tubes and transistors. Includes a review of electron physics with emphasis on electron emission and fundamental transistor theory. Covers two element electron devices including hot and cold-cathode vacuum and gas diodes and semi-conductor diodes; three-element vacuum tubes and transistors; multigrid tubes including tetrodes, pentodes, and beam-power tubes; special transistors and diodes. Includes a review of auxiliary electronic components including potentiometers, transformers, and relays, and a review of several electronic circuits involving series and parallel resonance, bandwidth, and coupled-circuit theory. Also covers elementary filter design, harmonic analysis, network theorems, and four-terminal networks. 3 Term Units. (3 Class Hrs/Wk)

Prerequisite: Third term standing or approval of department head.

6.211R -- Vacuum Tube and Transistor Analysis Lab.

Practical application of the theory studied in Vacuum Tube & Transistor Analysis (6.210R). Involves the disassembling of diodes, triodes, tetrodes, pentodes, and multigrid tubes, and transistors to observe their construction. Also included is the plotting of the electrical characteristic curves of vacuum tubes and transistors. The plotted curves are used to determine the transconductance, the amplification factor, and the plate-resistance of vacuum tubes and the current-gain of junction transistors in various circuit configurations. The operation of the thyatron is tested with A-C and D-C plate voltages, using a phase-shifter for grid control. Includes the testing of Zener and double-based diodes and special transistors such as the PNP. Transformer-coupled theory is verified by testing out under-coupled, optimum-coupled, and over-coupled coils. Gain of amplifiers is computed in decibels and auxiliary audio elements such as microphones, speakers, and tape recorders are reviewed. 1 Term Unit. (3 Lab Hrs/Wk)

Prerequisite: Third term standing or approval of department head.

RECOMMENDED ELECTIVES

6.240 -- Electronic Data Processing.

An introduction to the principles of electronic digital computers. Covers the application and programming of computers in business, industrial, and scientific organizations. Reviews the decimal and binary numbering systems as they relate to computers; analyzes computer circuitry with emphasis on transistor and diode switching circuits; presents the fundamentals of logical design with an introduction to Boolean Algebra and the use of block diagrams; analyzes the major divisions of a digital computer in terms of the arithmetic element, the memory element, input and output devices, and the control element. 3 Term Units. (3 Class Hrs/Wk)

Prerequisite: Fifth term standing or approval of department head.

6.242 -- Microwaves.

A theory and laboratory course designed as an introduction to microwaves. Begins with a study of ultra-high frequencies to develop a good foundation for the development of waveguides and microwave circuitry. Covers UHF transmission lines, the application of quarter-wave lines, matching stubs, and standing-wave measurements. Transmission of microwave energy through waveguides is analyzed and the TE and TM modes of transmission are studied. Various types of waveguide plumbing including choke joints, directional couplers flap-attenuators, horns,

guide partitions, and flexible waveguides are studied. Includes also cavity resonators, high-frequency oscillators, magnetron and klystron oscillators, the resnatron, traveling wave tubes, and other high-frequency tubes and devices. Various types of UHF and microwave antennas and receiver circuitry are included. Microwave measurements involve the use of thermocouple voltmeters, bolometers, cavity wavemeters, slotted lines, and directional couplers. 3 Term Units. (2 Class--3 Lab Hrs/Wk)

Prerequisite: Sixth term standing or approval of department head.

6.236R -- Servo Systems.

Presents the principles of servo and data transmission systems with emphasis on fundamentals. Covers control systems and servo-mechanisms, elementary forms of control systems, servo systems, synchros, servoelements, electronic and magnetic amplifiers, direct current servomotors, performance improvers, methods for servos and measurement, and examples of servos and servo systems. 2 Term Units. (1 Class--3 Lab Hrs/Wk)

Prerequisite: Fourth term standing or approval of department head.

6.234R -- Wave Generation and Shaping.

A class and lab course designed as an introduction to pulse techniques. Begins with an introduction to pulses,

giving their historical development, typical applications, nomenclature, importance of pulse shapes, and responses of frequency-selective circuits to pulses. Includes the theory and operation of limiter and clipper circuits, differentiating and integrating circuits and D-C restoration. Various multivibrator circuits, synchronization circuits, and applications of multivibrators are studied. Also covers blocking oscillators of several types, their principle of operation, and application. 3 Term Units. (2 Class--3 Lab Hrs/Wk)

Prerequisite: Fourth term standing or approval of department head.

graphs. Instruction includes methods of calculating the layouts for square root, logarithmic, semi-logarithmic, meter scales, etc. Layout and drawing techniques for co-ordinate, logarithmic and polar graphs are also covered. Skills in inking procedures, use of the French curves and adjustable splines will be developed. 3 Term Units. (1 Class--6 Lab Hrs/Wk)

2.140 -- Cost Computations.

An introduction to the principles of time and cost computations for electronic-electrical device fabrication and installation. 2 Term Units. (2 Class Hrs/Wk)

2.141 -- Cost Computations Laboratory.

The student will apply the principles of estimating to find the cost and time allowances for simulated problems. 2 Term Units. (6 Lab Hrs/Wk)

2.143 -- Control Layout Systems.

Introduction of time and methods study for increased production, efficiency, and safety. Methods of equipment layout and production routing, and personnel and lighting requirements will be discussed. Laboratory time will be used to apply these principles to layout drawings. 3 Term Units. (1 Class--6 Lab Hrs/Wk)

2.145 -- Project Drafting.

A project drafting course emphasizing actual working conditions and drawing requirements. Diversified drawing project assignments will require application of

all previously acquired skills. Instruction will include speed dimensioning (coordinate dimensioning) use of drawing index, drafting room administration, coordination of specification and design, checking and back-checking methods, revisions, material takeoffs, and different methods representing circuits and circuit components. 4 Term Units. (1 Class--8 Lab Hrs/Wk)

2.147 -- Light Sheet Metal Drafting.

A study of pattern development, basic dye development techniques, and steps of fabrication for light sheet metal construction as applied to the electronic-electrical industry. Production design and layout for chassis, raceways, ducts, and metal cabinets are included. 2 Term Units. (6 Lab Hrs/Wk)

2.149 -- Pictorial Drafting.

A concentrated study of the development of pictorial wiring diagrams for instructional, demonstration, or sales purposes. Use of drafting templates and instrument drawings will be emphasized. 1 Term Unit. (3 Lab Hrs/Wk)

ing and stereoscopic methods using standard computational forms. 4 Term Units. (3 Class--3 Lab Hrs/Wk)

2.114 -- Electronic-Electrical Standards.

A study of the industrial standards published by the ASA, AIEE, and the NEMA. Also includes a survey of typical state, federal, and military electronic-electrical practices as they affect the draftsman. 3 Term Units. (3 Class Hrs/Wk)

2.129 -- Road and Highway Drafting.

Advanced course in drafting including profiles, grades, beds, routes, cross-sections, and details of bridge constructions, and hard-and-dirt-surfaced roads. Emphasis is placed on drafting requirements for roads built by government and private concerns. 2 Term Units. (6 Lab Hrs/Wk)

2.131 -- Mapping and Platting.

Principles of map platting using field survey data. Office procedure: basic earthwork computation, legal description, and subdivision planning. Simulated problems are used for application of principles. 3 Term Units. (1 Class--7 Lab Hrs/Wk)

2.133 -- Industrial Construction Drafting.

Introduction to the steps of construction for commercial and industrial buildings. Discussion of modern construction techniques; materials; drawing requirements; inter-relationship of architectural,

civil, mechanical, and electrical profession in industrial construction; Labor trends as they affect building design; and elements of industrial electrical drawing. Laboratory time is used to develop typical drawings requiring application of principles discussed. 4 Term Units. (2 Class--6 Lab Hrs/Wk)

2.134 -- Construction Costs Computation.

Introduction to the basic principles of estimating the amount and cost of materials required, and the attendant labor cost involved in various types of construction projects. 2 Term Units. (2 Class Hrs/Wk)

2.135 -- Construction Costs Computation Laboratory.

The student applies the principles of estimating to drawing assignments. Examples of local job estimates, and observation of the job site will be used to illustrate the principles whenever practicable. 2 Term Units. (5 Lab Hrs/Wk)

2.137 -- Industrial Construction Drafting.

Continuation of the industrial construction processes with emphasis on bridge and tower construction, plant layout, field drawings, revisions, and piping drawings. Laboratory time is used to develop typical drawings requiring application of principles discussed. 4 Term Units. (2 Class--6 Lab Hrs/Wk)

2.139 -- Scales and Graphs.

An advanced course covering techniques of design and layout of the meter scales and

layout, reading specifications, common materials of fabrication, checking and back-checking drawings, and material takeoffs. Discussion will cover the administration of the drafting room, issuing drawings, and revisions. Speed and accuracy will be considered of paramount importance. 3 Term Units. (9 Lab Hrs/Wk)

Prerequisite: Drafting 2.105, which may be taken concurrently.

2.121 -- Project Drafting.

This course continues the emphasis on industrial working conditions. Students will be assigned projects (requiring use of all previously learned skills and principles) that will familiarize them with many of the specialized fields of drafting. Instruction will include the basic methods for layout and detailing assemblies and sub-assemblies, reading specifications, common materials fabrication, checking and back-checking drawings, and materials takeoffs. Drafting room standards of various local industries will be discussed. Speed and accuracy will be considered of paramount importance. 3 Term Units. (8 Lab Hrs/Wk)

Prerequisite: Project Drafting 2.119, or equivalent.

2.123 -- Advanced Machine Drafting.

This course presents advanced studies in the major areas of machine drafting. The areas covered will include threads and fasteners, assembly drawings, pictorial drawings, and engineering graphics. 2 Term Units. (5 Lab Hrs/Wk)

Prerequisite: Advanced Machine Drafting
2.117.

2.125 -- Advanced Machine Drafting.

This course presents practical drafting problems requiring the application of previously learned principles of machine drafting. This will include advanced work on cams, gears, and the relationships of drafting to shop processes.
2 Term Units. (5 Lab Hrs/Wk)

Prerequisite: Advanced Machine Drafting
2.123.

2.127 -- Technical Illustration.

This course will introduce the techniques required for modern technical illustrations and drawings such as those found in catalogs, published presentation or exploded drawings. Both freehand drawing and template drawing will be covered. Balance, surface rendering, kinds of drawing implements, pencils, brush, and technique of light and shadow will be discussed. 2 Term Units. (4 Lab Hrs/Wk)

Prerequisite: Second year standing or approval of department head.

2.110 -- Construction Standards.

A study of the required practices covered in local, state and federal construction standards. 2 Term Units. (2 Class Hrs/Wk)

2.112 -- Photo Interpretation & Mapping.

Principles of preparing maps and charts from serial photographs by ground survey-

tool jig drawings. Simplified drawing techniques will be covered and general shop procedures will be discussed. Emphasis will be placed on the industrial requirements of drawings. 2 Term Units. (4 Lab Hrs/Wk)

Prerequisite: Third term standing or approval of department head.

2.111 -- Structural Drafting.

An advanced course emphasizing civil and structural drafting procedures. It includes the function and design of: the general plan, stress diagrams, shop drawings, foundation or masonry plans, erection diagrams, falsework plans, and sheet metal layout. Also, bill of materials, rivet lists, drawing indexes, design considerations, and strength of joints will be covered. The student will become acquainted with structural shapes, and principles of bridge-building, dam and earthwork constructions. 2 Term Units. (4 Lab Hrs/Wk)

Prerequisite: Sixth term standing or approval of department head.

2.113 -- Advanced Drafting Problems.

Survey of practical descriptive geometry. Theory of auxiliary views, true length, shape, and angles developed from point-line-plane through use of revolution. Elements of simple vector problems. Emphasis on application of principles to problems commonly encountered by draftsmen. 2 Term Units. (2 Class Hrs/Wk)

Prerequisite: Drafting 2.105, and Mathematics 1.204, or approval of department head.

2.115 -- Advanced Drafting Problems.

Introduction to practical descriptive geometry used by the draftsman. Theory of auxiliary views; true length, shape, and angle; and point of intersection is developed from point-line-plane through the use of revolution. Introduction to graphical solution of simple vector problems. Emphasis on application of principles to problems commonly encountered by draftsmen. 3 Term Units. (3 Class Hrs/Wk)

Prerequisite: Drafting 2.105, and Mathematics 1.204.

2.117 -- Advanced Machine Drafting.

This course extends background in the area of machine drafting. It will include technical sketching and shape description, multi-view projections, sectional views and revolutions. 2 Term Units. (5 Lab Hrs/Wk)

Prerequisite: Second year standing or approval of department head.

2.119 -- Project Drafting.

This course emphasizes working conditions of the industrial drafting room. Students will be assigned projects that will include one or more drawings requiring all of the skills previously acquired. Instructions will include the methods for detail

2.104 -- Production Planning and Practices.

This course will introduce elements of production control and planning such as: machine routing, steps of fabrication, efficient shop layout, materials handling, storage problems, and production records.
4 Term Units. (3 Class--2 Lab Hrs/Wk)

Prerequisite: Second year standing or approval of instructor.

2.105 -- Drafting.

This is an intermediate course designed to prepare students to enter mechanical, structural, civil and architectural drafting. It includes isometric projection, perspective drawings, descriptive geometry (development and intersections), and oblique drawings. Emphasis is placed on the concept, use technique of inking, and the development of working drawings as used in industry. Limitations of general shop equipment are discussed. 2 Term Units. (4 Lab Hrs/Wk)

Prerequisite: Drafting 2.101 or equivalent.

2.106 -- Metals Application Treatment & Testing.

A survey course in metallurgy covering the common materials of fabrication, metals coding systems, characteristics, methods of refining and alloying, and methods of treating. The goal of the course is to acquaint the student with the various types and the working of metals used in industry.
3 Term Units. (2 Class--3 Lab Hrs/Wk)

Prerequisite: Second year standing or approval of department head.

2.107 -- Architectural Drawing.

An advanced course emphasizing architectural drawing techniques. The course will cover methods and procedures in architectural drawings, lettering, layout and design of the standard drawings (construction and display), and rendering the display drawing. Carpentry and masonry principles and construction drawings are included. Design principles such as standard stock sizes, strength of joints, maximum loads and spans, and material weights will be discussed. Application consists of preparing sets of working drawings of residential and commercial buildings. 2 Term Units. (2 Class--3 Lab Hrs/Wk)

Prerequisite: Second year standing or approval of department head.

2.108 -- Industrial Safety.

A survey of the principles of safety for industry. Includes safety codes, personnel considerations, and safety practices relating to design work, materials handling, and equipment. 3 Term Units. (3 Class Hrs/Wk)

Prerequisite: Second year standing or approval of department head.

2.109 -- Mechanical Drafting.

An advanced course emphasizing mechanical design. It includes sketching, cam and gear layout, isometric drawings, welding drawings, tolerances and allowances, and

DRAFTING TECHNOLOGY COURSE DESCRIPTIONS

2.100 -- Introduction to Fabrication Practices.

An introductory course of drafting and observation. Students will be assigned drawing projects and will normally view the physical object of the drawing in order to develop their visualization of the subject on the drafting board. Frequent field trips may be made to observe modern methods of manufacturing, casting, forging, construction, and assembly at local industry. Emphasis will be placed on materials, methods of fabrication, glossary, scaling for drawing, and visualization of fabricated objects or assemblies. 3 Term Units. (1 Class--6 Lab Hrs/Wk)

Prerequisite: Drafting 2.101, which may be taken concurrently.

2.101 -- Drafting.

This is a fundamental course in drafting designed to give the student a basic understanding of drawing techniques. Emphasis will be placed on the application of drafting instruments, standard orthographic projection, layout procedures, and ASA approved lettering techniques. Drawing techniques such as geometric construction, selection of views, sectional and auxiliary views, revolutions, thread, and standard dimensioning practices will be covered. 2 Term Units. (4 Lab Hrs/Wk)

Prerequisite: High school algebra or equivalent. Mathematics 1.202 may be taken concurrently.

2.102 -- Introduction to Specifications.

This is a course designed to acquaint the student with common usage and practice in the preparation and interpretation of specifications. Examination of existing specifications covering current subjects will be used whenever possible with practical problems to teach the application of theory learned. 3 Term Units.
(3 Class Hrs/Wk)

Prerequisite: Second year standing or approval of department head.

2.103 -- Electrical Drafting.

This course covers the techniques required for the electrical and electronic fields. It includes charts, graphs, chassis layout, schematic and pictorial wiring diagrams, routing diagrams (power distribution, lighting, conduit and ducts, underground wiring and ducts), and location drawings. Standard schematics, such as motor starters, annunciators, AM receivers, and other typical industrial circuits will be covered. ASA and EEIA approved symbols will be used. 2 Term Units. (4 Lab Hr/Wk)

Prerequisite: Drafting 2.101 or equivalent.

CIVIL-STRUCTURAL AND HIGHWAY COURSE DESCRIPTIONS

6.109 -- Applied Mechanics I.

The course consists of a study of energy at rest (equilibrium). This includes resolution of forces, equilibrants of forces in one plane, simple machines, and equilibrants of nonconcurrent forces. Time is provided for demonstrations and experiments to help clarify the principles and procedures covered. 3 Term Units. (2 Class--3 Lab Hrs/Wk)

Prerequisites: Technical Mathematics II and Applied Physics II, or equivalent.

6.101 -- Plane Surveying I.

A beginning course in surveying techniques designed to give the student an understanding of the fundamentals of chaining and leveling, care and adjustment of surveying instruments and office procedures. Provision is made by appropriate field work for practical application of the techniques learned. 3 Term Units. (1 Class--4 Lab Hrs/Wk)

Prerequisite: Mathematics II or equivalent.

6.103R -- Plane Surveying II.

A continuation of Plane Surveying I, designed to familiarize the student completely with the engineer's transit. Uses of the transit are considered and practical problems put the theory into practice. 3 Term Units. (1 Class--4 Lab Hrs/Wk)

Prerequisites: Technical Mathematics II and Plane Surveying I or equivalent. Technical Mathematics II may be taken concurrently.

6.500 -- Surveying Computations.

A continuation of Plane Surveying II. The transit and chain are used to make traverses beginning with elementary types and extending to more extensive and complex field problems. Computations or areas are made using the double meridian method. Practical application of the techniques studied is provided by appropriate field work. 3 Term Units. (1 Class--4 Lab Hrs/Wk)

Prerequisites: Practical Surveying II and Technical Mathematics III or equivalent. Technical Mathematics III may be taken concurrently.

6.107T -- Strength of Materials I.

A study of the stresses and strains that occur in bodies when subjected to tensile, compressive and shearing forces, including the common theory of beams. The distribution and magnitude of stresses are examined in welded and riveted joints, thin wall cylinders, torsional members and beams. Practice problems emphasize the materials studied. 2 Term Units. (2 Class Hrs/Wk)

Prerequisites: Applied Mechanics II and Technical Mathematics III or equivalent.

6.107 -- Strength of Materials Laboratory I.

To be taken concurrently with Strength of Materials I. 1 Term Unit. (3 Lab Hrs/Wk)

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AUTOMOTIVE MECHANICAL CURRICULUM

B A S I C C O U R S E S

	<u>Term</u>	<u>Units</u>
Automotive Chassis I.	2	
Automotive Chassis Lab I.	2	
Automotive Chassis II.	2	
Automotive Chassis Lab II.	2	
Internal Combustion Engines I.	2	
Internal Combustion Engines Lab I.	1	
Internal Combustion Engines II.	2	
Internal Combustion Engines Lab II.	2	
Automotive Electricity I.	3	
Automotive Electricity Lab I.	1	
Fuel Systems & Carburetion I.	2	
Fuel Systems & Carburetion Lab I.	1	
Fuel Systems & Carburetion II.	2	
Fuel Systems & Carburetion Lab II.	1	
Power Steering.	2	
Power Trains.	2	
Power Trains Lab.	2	
Front End Alignment.	2	
Front End Alignment Lab.	1	
Applied Fluid Mechanics.	2	
Practical Physics I.	4	
Practical Physics II.	4	
Practical Physics III.	4	
Welding I-A.	2	
Communication Skills I.	3	
Communication Skills II.	3	
Mathematics II.	3	
Automotive Service Management.	2	
Employer-Employee Relations.	2	
Restricted Electives.	27	
MINIMUM GRADUATION REQUIREMENTS.	90	

*R E S T R I C T E D E L E C T I V E S

Automotive Mechanic Option

	<u>Term Units</u>
*Automotive Electricity II.	.3
*Automotive Electricity Lab II.	.1
*Tune-Up and Diagnosis.	.2
*Tune-Up and Diagnosis Lab.	.2
*Automatic Transmissions.	.3
*Automatic Transmissions Lab.	.1
*Automotive Repair I.	.3
*Automotive Repair II.	.3
*Automotive Repair III.	.3
Diesel Engines I.	.2
Diesel Engines Lab I.	.1
*Automotive Fuels & Lubricants.	.2
*Automotive Materials.	.2
*Automotive Repair Estimating.	.2
Automotive Machine Tool Practice I.	.2
Automotive Machine Tool Lab I.	.1
Automotive Machine Tool Practice II.	.2
Automotive Machine Tool Lab II.	.1
Blueprint Reading and Sketching.	.1
Industrial Economics.	.3
Welding I-B.	.2

JOB OPPORTUNITIES

Satisfactory completion of the courses required for graduation will prepare the student for initial employment leading to such positions as:

AUTO PARTS MAN
 SERVICE SALESMAN
 AUTOMOTIVE MECHANIC
 SPECIALTY TECHNICIAN
 MAINTENANCE MECHANIC
 SERVICE STATION OWNER
 ASSISTANT PARTS MANAGER
 AUTOMOTIVE MECHANIC APPRENTICE

Typical Sequence of Courses

AUTOMOTIVE MECHANIC CURRICULUM

Hours/Week		First Term Course Title	Term	
Class	Lab		Units	*Hours
2		Automotive Chassis I	2	24
	6	Auto. Chassis Lab I	2	72
2		Int. Comb. Engines I	2	24
	3	Int. Comb. Engines Lab II	1	36
1	3	Welding I-A	2	48
3	2	Practical Physics I	4	60
3		Mathematics II	3	36
TOTAL			15	

Second Term

2		Automotive Chassis II	2	72
	6	Auto. Chassis Lab II	2	72
2		Int. Comb. Engines II	2	24
	6	Int. Comb. Eng. Lab II	2	72
2		Fuel Sys. & Carb. I	2	24
	3	Fuel Sys. & Carb. Lab I	1	36
3	2	Practical Physics II	4	60
TOTAL			15	

Third Term

2		Power Trains	2	24
	6	Power Trains Lab	2	72
3		Auto. Electricity I	3	36
	3	Auto. Electricity Lab I	1	36
2		Fuel Sys. & Carb. II	2	24
	3	Fuel Sys. & Carb. Lab II	1	36
3	2	Practical Physics III	4	60
TOTAL			15	

Fourth Term

Hours/Week		Course Title	Term	
Class	Lab		Units	*Hours
3		Auto. Electricity II	3	36
	3	Auto. Elec. Lab II	1	36
2		Front End Alignment	2	24
	3	Front End Alignment Lab	1	36
	9	Automotive Repair I	3	108
2		Applied Fluid Mechanics	2	24
3		Communication Skills I	3	36
TOTAL			15	

Fifth Term

3		Auto. Transmissions	3	36
	3	Auto. Transmissions Lab	1	36
1	3	Power Steering	2	36
	9	Automotive Repair II	3	108
3		Communication Skills II	3	36
2		Automotive Materials	2	24
TOTAL			14	

Sixth Term

2		Tune-Up and Diagnosis	2	24
	6	Tune-Up and Diagnosis		
		Lab	2	72
	9	Automotive Repair III	3	108
2		Automotive Fuels & Lub.	2	24
2		Automotive Repair Est.	2	24
2		Employer-Employee		
		Relations	2	24
2		Auto.-Service Management	2	24
TOTAL			15	

*Computed on 12 weeks.

AUTOMOTIVE COURSE DESCRIPTIONS

3.300 -- Automotive Chassis I.

This course is designed to give students an understanding of the principles of operation of automotive chassis components. Fundamentals of front suspension and steering geometry, diagnosis of steering and suspension troubles, and overhaul techniques of steering and suspension systems are studied. 2 Term Units. (2 Class Hrs/Wk)

Prerequisite: Practical Physics I should be taken concurrently.

3.301 -- Automotive Chassis Laboratory I.

A course to develop the ability to use basic hand tools, measuring tools, and shop equipment in the process of overhauling and adjusting various types of suspension and steering systems. It is the practical application of the theory studied in Automotive Chassis I. 2 Term Units. (6 Lab Hrs/Wk)

Prerequisite: Automotive Chassis I should be taken concurrently.

3.302 -- Automotive Chassis II.

The purpose of this course is to familiarize students with the functions and principles of operation used on all major types of automotive brake systems.

student should acquire knowledges of brake trouble shooting, procedures for overhauling both conventional and power brakes, and service techniques. 2 Term Units. (2 Class Hrs/Wk)

Prerequisite: Automotive Chassis I or equivalent. Practical Physics II should be taken concurrently.

3.303 -- Automotive Chassis Laboratory II.

This is the practical application of the theory studied in Automotive Chassis II. 2 Term Units. (6 Lab Hrs/Wk)

Prerequisites: Automotive Chassis II should be taken concurrently.

3.304 -- Internal Combustion Engines I.

This course is designed to give the student an understanding of the principles of operation of various types of internal combustion engines. Students should acquire a knowledge of the construction and operation of the automotive engine, all components, and accessories. 2 Term Units. (2 Class Hrs/Wk)

Prerequisites: Practical Physics I and Mathematics II should be taken concurrently.

3.305 -- Internal Combustion Engines Laboratory I.

This is the practical application of Internal Combustion Engines I, consisting of basic service and overhaul techniques

commonly used on automotive engines. Removal and replacement of all engine and accessory components, with a detailed study of the function of each part, are supervised by the instructor. 1 Term Units. (3 Lab Hrs/Wk)

Prerequisites: Practical Physics I, Mathematics II, and Internal Combustion Engines I should be taken concurrently.

3.306 -- Internal Combustion Engines II.

This course is intended to provide the student with knowledge of overhaul methods, trouble shooting, general engine performance and testing, and service techniques covering valve, cylinder, and bearing systems. 2 Term Units. (2 Class Hrs/Wk)

Prerequisites: Internal Combustion Engines I. Practical Physics II should be taken concurrently.

3.307 -- Internal Combustion Engines Lab. II.

A shop course designed to provide experience in practical engine reconditioning. Diagnosis of troubles directly related to the engine and its performance is practiced with the use of test instruments. A companion course for Internal Combustion Engines II. 2 Term Units. (3 Lab Hrs/Wk)

Prerequisites: Practical Physics I, Internal Combustion Engines II, and Practical Physics II should be taken concurrently.

3.308 -- Automotive Electricity I.

This course is designed to provide the student with an understanding of the fundamental principles of electricity as used by the auto mechanic. Construction and function of automotive electrical components, including storage batteries, switches, ignition, and cranking systems are studied in detail with the aid of demonstrations, cutaway, and mock-up equipment. 3 Term Units. (3 Class Hrs/Wk)

Prerequisite: Practical Physics III must be taken concurrently.

3.309 -- Automotive Electricity Laboratory I.

This is the practical application of the theory studied in Automotive Electricity I. 1 Term Unit. (3 Lab Hrs/Wk)

Prerequisites: Practical Physics III and Automotive Electricity I must be taken concurrently.

3.310 -- Fuel Systems and Carburetion I.

A course designed to give the student an understanding of the fundamental principles of carburetion, an overview of principles of engine fuel systems and fuels, operation and function of all types of fuel systems, and an understanding of the simple automotive carburetor. The student should acquire a basic knowledge of carburetor circuits. 1 Term Units. (3 Lab Hrs/Wk)

3.311 -- Fuel Systems and Carburetion Lab I.

This course is designed to enable the student to develop skill and understanding in overhaul of all types of simple automotive fuel systems and carburetors, analyzing the function of each component and circuit. Diesel and LPG fuel systems are disassembled by the student for study of construction and function of components and reassembled. A companion course of Fuel Systems and Carburetion. 1 Term Unit. (3 Lab Hrs/Wk)

Prerequisites: Internal Combustion Engines I. Fuel Systems and Carburetion should be taken concurrently.

3.312 -- Fuel Systems and Carburetion II.

An advanced course in techniques and procedures for overhaul and service of carburetors and carburetion accessories, including all types of single and multiple throat models. Principles of operation of special carburetion equipment, such as supercharger and automotive fuel injection, are studied. Diagnosis and testing procedures involving carburetion systems are covered. 2 Term Units. (2 Class Hrs/Wk)

Prerequisites: Fuel Systems and Carburetion I.

3.313 -- Fuel Systems and Carburetion Laboratory I.

Developing skills in service and overhaul of all types of single and multiple throat carburetion systems. Detailed servicing

procedures on various types of carburetor circuits, using laboratory equipment. Basic trouble shooting procedures are practiced on operating engine components. 1 Term Unit. (3 Lab Hrs/Wk)

Prerequisites: Fuel Systems & Carburetion I. Fuel Systems & Carburetion II should be taken concurrently.

3.314 -- Power Steering.

This is a course in practical power steering work covering trouble shooting, dismantling, inspection of parts, reassembly, and adjustments to cover principle repair procedure on those power steering units common to the automotive trade. Principles of operation will be studied in the classroom and applied directly to power steering units in the laboratory. 2 Term Units. (1 Class-- 3 Lab Hrs/Wk)

Prerequisite: Second year standing or instructor's approval, and Applied Fluid Mechanics.

3.316 -- Power Trains.

This is a course covering all components of the power train, including clutch, standard and overdrive type transmissions, drive line, and final drive. These components will be studied in detail in the classroom, using lecture and visual aids, to determine the function and operation of each unit to form a basis for subsequent overhaul procedures. 2 Term Units. (2 Class Hrs/Wk)

Prerequisite: Automotive Chassis II or equivalent.

3.317 -- Power Trains Laboratory.

This course is designed to build skill and to utilize practical work covering overhaul and troubleshooting all units of the automotive power train. All work is performed on laboratory units in conjunction with concurrent attendance in the Power Trains course. 2 Term Units. (6 Lab Hrs/Wk)

Prerequisite: Power Trains should be taken concurrently.

3.318 -- Front End Alignment.

This course provides a detailed study of wheel alignment. Wheel alignment factors, equipment, and procedures are covered in detail. Wheel balance methods and machines are studied, as well as alignment troubles. 2 Term Units. (2 Class Hrs/Wk)

Prerequisite: Automotive Chassis I or equivalent.

3.319 -- Front End Alignment Laboratory.

This is a practical application of the theories studied in Front End Alignment. The student should become skilled in the manipulations of different styles of alignment equipment, as well as familiar with the front end systems of various makes of automobiles. 1 Term Unit. (3 Lab Hrs/Wk)

Prerequisites: Automotive Chassis Laboratory I or equivalent. Front End Alignment must be taken concurrently.

3.320 -- Applied Fluid Mechanics.

A study of the practical uses of hydraulic power transmission and application. The fundamental principles are reviewed and the uses of hydraulic pressure and fluid flow in brakes, pumps, power steering units, fluid couplings, torque converters, and power accessories are covered thoroughly. 2 Term Units. (2 Class Hrs/Wk)

Prerequisites: Practical Physics I & II.

1.300 -- Practical Physics I.

This course is designed for skilled workers, covering matter, measurements, mechanics and machines. Laboratory time is provided for demonstrations and experiments to help clarify the principles and procedures covered in class. 4 Term Units. (3 Class--2 Lab Hrs/Wk)

Prerequisite: Mathematics I or equivalent.

1.302 -- Practical Physics II.

This course is designed for skilled workers, covering heat, light and sound. Laboratory time is provided for demonstrations and experiments to help clarify the principles and procedures covered in class. 4 Term Units. (3 Class--2 Lab Hrs/Wk)

Prerequisite: Mathematics I or equivalent.

1.304 -- Practical Physics III.

This course in practical physics is designed for skilled workers, covering magnetism and electricity. Laboratory time is provided for demonstrations and experiments to help clarify the principles and procedures covered in class. 4 Term Units. (3 Class--2 Lab Hrs/Wk)

Prerequisite: Mathematics II or equivalent.

1.601 -- Welding I.

This course may be taken in two terms of 1 class--3 lab hrs/wk, as Welding IA (2 Term Units) and Welding IB (2 Term Units).

Setup and operation of oxy-acetylene and electric arc welding equipment. Demonstrations and practice in welding, brazing, and soldering ferrous and non-ferrous metals and their alloys. Various types of welds are made and tested. Technical information is correlated with actual practice to provide the student with an understanding of the composition of the various metals and methods of the fabrication used in construction, maintenance, and repair industries. 4 Term Units. (2 Class--6 Lab Hrs/Wk)

1.100 -- Communication Skills I.

See ENGINEERING TECHNOLOGY, Section B.

1.102 -- Communication Skills II.

See ENGINEERING TECHNOLOGY, Section B.

1.202 -- Mathematics II.

This is a course in practical mathematics for skilled workers, including the fundamentals of applied algebra and applied geometry, including symbols, equations, ratio and proportion, exponents, radicals, formulas, geometric constructions, and introductory applied trigonometry. 3 Term Units. (3 Class Hrs/Wk)

Prerequisite: Mathematics I or equivalent.

3.322 -- Automotive Service Management.

This outlines the duties and responsibilities of the service manager. The students study methods of organizing service personnel, shop facilities, and an introduction to shop layout and building facilities. Appreciation of good relationship with customers, labor and management groups, and individuals is emphasized. 2 Term Units. (2 Class Hrs/Wk)

Prerequisite: Second year standing or equivalent.

1.500 -- Employer-Employee Relations.

The objective of this course is to provide an understanding of the rights and responsibilities of employees. As a guide to making adequate decisions, a study of population, economic and employment trends, and hours and working conditions is included. The development of and the role played by labor organizations, how labor representatives and management bargain, government laws and regulations covering collective bargaining, other state and federal labor laws and how labor disputes are negotiated and given consideration. Information on government programs for old age and unemployment assistance and additional information on the problems faced by individuals applying for work and the individual's associations with fellow workers and company representatives are covered. 2 Term Units. (2 Class Hrs/Wk)

RESTRICTED ELECTIVES

3.322 -- Automotive Electricity II.

This course is a continuation of Automotive Electricity I, covering automotive lighting, charging, and indicating systems. Students will acquire the ability to diagnose minor troubles in these systems as well as be able to interpret and trace automotive wiring diagrams. Common types of minor electrical accessories are studied. 3 Term Units. (3 Class Hrs/Wk)

Prerequisite: Automotive Electricity I or equivalent.

3.323 -- Automotive Electricity Laboratory II.

This is a practical application of the theory studied in Automotive Electricity II. 1 Term Unit. (3 Lab Hrs/Wk)

Prerequisite: Automotive Electricity II should be taken concurrently.

3.324 -- Tune-Up and Diagnosis.

This course is designed to give students the ability to recognize and diagnose malfunctions in the automotive engine and its accessory systems. Advanced methods of testing electrical and carburetion systems are studied. The students should develop the ability to analyze the operation of all engine accessories directly to engine performance. 2 Term Units. (2 Class Hrs/Wk)

Prerequisite: Second year standing and Automotive Electricity II, or equivalent.

3.325 -- Tune-Up and Diagnosis Laboratory.

This course is a practical application of the theory studied in the Tune-Up and Diagnosis course. Live automotive or laboratory equipment will be used by students in diagnosing and correcting troubles. Various types of tune-up equipment are used, enabling the students to develop skill in their use. 2 Term Units. (6 Lab Hrs/Wk)

Prerequisites: Second year standing. Tune-Up and Diagnosis should be taken concurrently.

3.326 -- Automatic Transmissions.

This course covers automatic transmissions work, including principles of operation, trouble shooting and overhaul procedures on hydraulically operated transmissions, torque converters, and fluid couplings used with automatic transmissions common to the automotive field. 2 Term Units. (3 Class Hrs/Wk)

Prerequisites: Applied Fluid Mechanics and Power Trains, or equivalent.

3.327 -- Automatic Transmissions Laboratory.

This course is a practical application of the theory studied in Automatic Transmissions, using the various types of automatic transmissions found in automotive equipment. 1 Term Unit. (3 Lab Hrs/Wk)

3.329 -- Automotive Repair I.

This is a shop course in which the student can develop additional abilities and understanding through diagnosis and repair of operating automotive equipment. Conditions and practices are similar to automotive repair shops in industry. It will include overhaul and maintenance procedures and practices on brakes, suspension systems,

power trains, and engines. Students will develop skills in analyzing typical problems, outlining job procedures, conservation of working time, and following up with actual overhaul of the defective units. 3 Term Units. (9 Lab Hrs/Wk)

Prerequisites: Second year standing or instructor's approval. Automotive Electricity II to be taken concurrently.

3.331 -- Automotive Repair II.

This course is a continuation of Automotive Repair I in further developing the students' abilities and knowledges. Skills developed in previous courses to be improved, with emphasis on automotive electricity and automatic transmission units. Diagnosis, testing, overhauling of units will be practiced under industrial conditions. 3 Term Units. (9 Lab Hrs/Wk)

Prerequisites: Automotive Repair I or equivalent. Automatic Transmissions to be taken concurrently.

3.333 -- Automotive Repair III.

This course is a continuation of Automotive Repair II to further develop the students' abilities in diagnosis and repair of automotive units, with emphasis on power steering and tune-up procedures. Power accessories are serviced as time and availability permit. 3 Term Units. (9 Lab Hrs/Wk)

Prerequisite: Automotive Repair II or equivalent.

3.334 -- Automotive Fuels and Lubricants.

This is a theory course covering the nature and origin of petroleum products and of manufacturing processes involved in development and perfection of fuels and lubricants. The students study problems involved in the conditions under which these products are used and the tasks they are called upon to perform. 2 Term Units. (2 Class Hrs/Wk)

Prerequisite: Second year standing or equivalent, or approval of instructor.

3.338 -- Automotive Repair Estimating.

This course is designed to give the student an understanding of proper diagnosing and estimating of labor and material costs involved in the repair and service of automotive equipment. Emphasis will be on the use of typical manuals and price lists used in the industry. The students will make practical application of the theories studied in this course on units to be repaired in shop. 2 Term Units. (2 Class Hrs/Wk)

Prerequisite: Second year standing or equivalent.

1.502 -- Industrial Economics.

Industrial Economics deals with the principles involved in the operation of the American economic system. The role of business and industry in the total economy is studied. Basic principles

are applied to the relationship of employer and employee. Topics considered include historic trends, business organization, prices and competition, imperfect competition and monopoly, price levels, business cycles, taxation, labor unions, management associations, labor-management relations, labor legislation, and social and private security. 3 Term Units.
(3 Class Hrs/Wk)

S E C T I O N D

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A Late Afternoon and Evening School

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Richard D. Boss, Director

BUSINESS EDUCATION CURRICULUM

B A S I C C O U R S E S

	<u>Term</u>	<u>Units</u>
Business English I		3
Business English II.		3
Business English III		3
Office Machines I.		3
Office Machines II		3
Office Machines III.		3
Office Procedures I.		3
Office Procedures II		3
Office Procedures III.		3
Typewriting I.		3
Typewriting II		3
Typewriting III.		3
Electives.		12
MINIMUM GRADUATION REQUIREMENTS.		48

R E S T R I C T E D E L E C T I V E S

General Office Option

Accounting I	4
Bookkeeping I.	4
Bookkeeping II	4

Stenographic Option

Shorthand I.	4
Shorthand II	4
Shorthand III.	4

O P T I O N A L E L E C T I V E S

General Office Option

	<u>Term</u> <u>Units</u>
Accounting II	3
Business Law.	4
Payroll Accounting.	3

Stenographic Option

Shorthand IV.	4
Stenographic Record Keeping	4
Typewriting IV.	3

J O B O P P O R T U N I T I E S

Satisfactory completion of the courses required for graduation will prepare the student for initial employment in such positions as:

GENERAL OFFICE

Clerk-Typist
Bookkeeper
Receptionist
Secretary
Office Machines Operator
Cashier
Payroll Clerk
Time-Keeper

STENOGRAPHY

Secretary
Legal Stenographer
Public Stenographer
Court Reporters
Receptionist
Technical Stenographer
Clerk-Typist
Office Machines Operator

Typical Sequence of Courses

GENERAL OFFICE OPTION

Hours/Week		First Term	Term	
<u>Class</u>	<u>Lab</u>	<u>Course Title</u>	<u>Units</u>	<u>*Hours</u>
3		Business English I	3	36
2	2	Office Machines I	3	48
2	4	Office Procedures I	3	72
2	4	Typewriting I	3	72
3	3	Bookkeeping I	4	72
TOTAL			16	

Second Term

3		Business English II	3	36
2	2	Office Machines II	3	48
2	4	Office Procedures II	3	72
2	4	Typewriting II	3	72
3	3	Bookkeeping II	4	72
TOTAL			16	

Third Term

3		Business English III	3	36
2	2	Office Machines III	3	48
2	4	Office Procedures III	3	72
2	4	Typewriting III	3	72
3	3	Accounting I	4	72
TOTAL			16	

*Computed on 12 weeks.

STENOGRAPHIC OPTION

		First Term	Term	
Hours/Week			Units	*Hours
<u>Class</u>	<u>Lab</u>	<u>Course Title</u>		
3		Business English I	3	36
2	2	Office Machines I	3	48
2	4	Office Procedures I	3	72
2	4	Typewriting I	3	72
2	4	Shorthand I	<u>4</u>	72
		TOTAL	16	

Second Term				
3		Business English II	3	36
2	2	Office Machines II	3	48
2	4	Office Procedures II	3	72
2	4	Typewriting II	3	72
2	4	Shorthand II	<u>4</u>	72
		TOTAL	16	

Third Term				
3		Business English III	3	36
2	2	Office Machines III	3	48
2	4	Office Procedures III	3	72
2	4	Typewriting III	3	72
2	4	Shorthand III	<u>4</u>	72
		TOTAL	16	

*Computed on 12 weeks.

BUSINESS EDUCATION

2.550 -- Accounting I.

This has two main purposes. Payroll accounting is the first concern. The student is taken from the initial hiring of an employee through government reports and requirements. Federal income tax, social security, unemployment insurance, and other payroll and employee accounting problems are covered. The second purpose is to cover most prevalent accounting problems not covered in Bookkeeping I and II. Handling accruals and prepayments, distribution of sales and expenses, consignments, and special accounting problems encountered locally.

4 Term Units. (3 Class--3 Lab Hrs/Wk)

Prerequisite: Bookkeeping II or equivalent.

2.531R-- Bookkeeping I.

Bookkeeping I is a beginning course with the balance sheet approach. Extreme importance is given to basics to insure that each student has grasped beginning bookkeeping principles. A practice set is introduced. Emphasis is on actual problems. Attention is given to statements, accounts, ledgers, journals, banking procedures, purchases and sales and general records. 4 Term Units.

(3 Class--3 Lab Hrs/Wk)

2.533R -- Bookkeeping II.

A continuation of Bookkeeping I, payroll, office routine; notes receivable and payable; periodic adjustments; costing and inventory; working sheet; adjusting, closing and readjusting entries; interpretation of financial statement; and types of business ownership are offered which will enable the student to step from the classroom into the business office. Practice set is included. 4 Term Units. (3 Class--3 Lab Hrs/Wk)

Prerequisite: Bookkeeping I or equivalent.

1.120R -- Business English I.

Business English I is aimed at building the student's vocabulary, spelling ability, usage of words and provides a thorough review of the principles of grammar while applying them in sentences. Written and oral communications as required in business situations are emphasized. 3 Term Units. (3 Class Hrs/Wk)

Prerequisite: High school grammar or equivalent.

1.122R -- Business English II.

This course is intended to follow Business English I and will include continuation of the review of grammar, study of vocabulary building, spelling, punctuation and penmanship. Writing of business letters will be introduced.

Speech and the informal personal communications studied. Practical application in the writing of business letters will be stressed. 3 Term Units. (3 Class Hrs/Wk)

Prerequisite: Business English I or equivalent.

1.124R -- Business English III.

In this term, grammar, punctuation, spelling, penmanship, and personal communication will receive specialized coverage. Emphasis will be given to special types of business letters, forms, wire communications, and reports. 3 Term Units. (3 Class Hrs/Wk)

Prerequisite: Business English II or equivalent.

2.519R -- Office Machines I.

This course combines basic mathematics with instruction in the applications of office machines to bookkeeping and other office problems. A review of mathematics with particular emphasis on shortcuts and interest is covered in the early part of the term. The general functions of office machines and understanding their application in business and the acquiring of reasonable skills in their use is a major goal. 3 Term Units. (2 Class--2 Lab Hrs/Wk)

2.521R -- Office Machines II.

This is a continuation of Office Machines I, with attention given to basic mathematics and the use of machines in solving bookkeeping problems. Particular attention is given to stenographic dictating and transcribing machines. Practice in planning layouts and cutting stencils and masters for use in duplicating copy and the use of photographic and electronic reproductive devices is covered. Students study the use of letter guides, screening plates, and correction and patching devices. 3 Term Units. (2 Class--2 Lab Hrs/Wk)

Prerequisite: Office Machines I or equivalent.

2.523R -- Office Machines III.

This term emphasizes mathematics machines found in larger offices, such as the key-driven calculator and the full-key board adding-listing machine. During the three terms of office machines, students will be rotated to receive practice on ten-key adding machines, full-key board adding-listing machines, key-driven calculators, and posting machines. 3 Term Units. (2 Class--2 Lab Hrs/Wk)

Prerequisite: Office Machines II or equivalent.

2.512 -- Office Procedures I.

This first course in Office Procedures is designed to introduce the student to general office duties and the simple tools he will use in an office. Detailed instruction in filing is given. 3 Term Units. (2 Class--4 Lab Hrs/Wk)

2.514 -- Office Procedures II.

This course is a continuation of Office Procedures I and prepares the student to handle office mail, telephone and telegraph communications, sources of information, and prepare office records and reports, including graphic presentations of business trends. Records and reports are emphasized. 3 Term Units. (2 Class--4 Lab Hrs/Wk)

Prerequisite: Office Procedures I or equivalent.

2.516 -- Office Procedures III.

This is a continuation of Office Procedures II, with emphasis on those office duties that require meeting the public as receptionist, cashiering, preparing credit instruments, and sales office operations. The student will be briefly introduced to economic factors that affect business in this course. Public relations and personality receive emphasis. 3 term units. (2 Class--4 Lab Hrs/Wk)

Prerequisite: Office Procedures II or equivalent.

2.541 -- Shorthand I.

This is a beginning course in Gregg Simplified Shorthand. It is a study of simplified principles which should enable the student to take simple dictation and transcribe it in the early part of the course; and while rhythm and good penmanship in forming shorthand characters are stressed more than speed, the student should progress to a speed of about 40 words per minute in the first term. 4 Term Units. (2 Class--4 Lab Hrs/Wk)

Prerequisites: No previous experience. Business English I or equivalent. Business English I may be taken concurrently.

2.543 -- Shorthand II.

This course is a continuation of Shorthand I. It deals principally with special and abbreviated forms, punctuation and compound words, in conjunction with writing and transcribing exercises, to build the student's speed to 60 words per minute writing and 20 words per minute typing. 4 Term Units. (2 Class--4 Lab Hrs/Wk)

Prerequisites: Shorthand I and Business English II may be taken concurrently.

2.545 -- Shorthand III.

This course is for the student who has learned the principles of shorthand

covered in Shorthand I and II. It includes advanced vocabulary, phrase building, and word building principles. Practice included should develop the student's speed to 100 words per minute from unfamiliar dictation and 30 words per minute transcription. 4 Term Units. (2 Class--4 Lab Hrs/Wk)

Prerequisite: Shorthand II or equivalent.

2.547 -- Shorthand IV (advanced).

An advanced course designed to train the student for stenographic work on a production basis while allowing specialization in professional and industrial fields, such as legal, engineering, medical, etc. Dictation of unfamiliar matter should be taken at 120 words per minute with 30 words per minute transcription as available typewritten copy. 4 Term Units. (2 Class--4 Lab Hrs/Wk)

Prerequisite: Shorthand III or equivalent.

2.501 -- Typewriting I.

This is a beginning course in typing for those with no previous typing instruction. It covers the parts and construction of the more common makes of typewriters, learning of the keyboard, and the basic techniques of the touch system. The student should develop rhythm in his movements and attain a typing speed of approximately 25 words per minute. 3 Term Units. (2 Class--4 Lab Hrs/Wk)

Prerequisite: No previous typing experience. Business English I should be taken concurrently.

2.503 -- Typewriting II.

This is a continuation of Typing I, with emphasis on increasing the typing speed to 40 words per minute while mastering the various forms of business communications. 3 Term Units. (2 Class--4 Lab Hrs/Wk)

Prerequisites: Typing I and Business English II or equivalent. Business English II may be taken concurrently.

2.505 -- Typewriting III.

An intermediate course including corrective and acceleration drills to develop a minimum typing speed of 50 words per minute. The student receives instruction in cutting stencils and masters for various duplicating processes and additional training in the various business papers encountered in a general office. 3 Term Units. (2 Class--4 Lab Hrs/Wk)

Prerequisite: Typing II or equivalent.

2.507 -- Typewriting IV (Specialized).

An advanced course intended to increase the typing speed to a minimum of 60 words per minute while introducing the student to various types of specialized applications in industrial and professional fields such as legal, engineering, medical, sales and public relations communications, etc. 3 Term Units. (2 Class--4 Lab Hrs/Wk)

S E C T I O N E

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INDUSTRIAL SUPERVISORY TRAINING

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VOCATIONAL-TECHNICAL EDUCATION

INDUSTRIAL SUPERVISION CURRICULUM

Program for a Certificate In Basic Supervisory Practices

(18 Term Units)

First Term

	<u>Term</u> <u>Units</u>
Elements of Supervision	3

Second Term

Basic Psychology for Supervisors. . . .	3
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Third Term

Written Communications for Supervisors.	3
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Fourth Term

Developing the Employee through Training.	3
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Fifth Term

Supervisory Elective.	3
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Sixth Term

General Elective.	3
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TOTAL	18
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Recommended Supervisory Electives

	<u>Term</u>	<u>Units</u>
Human Relations	3	
Labor-Management Relations.	3	
Industrial Economics.	3	
Methods Improvement for Supervisors . . (Work Simplification)	3	
Safety Training and Fire Prevention . .	3	
Cost Control for Supervisors.	3	
Supervisors' Responsibility for Management of Personnel	3	
Organization and Management	3	
Job Analysis for Wage Administration. .	3	

Recommended General Education Electives

	<u>Term</u>	<u>Units</u>
Oral Communications for Supervisors . .	3	
Report Writing for Supervisors.	3	

INDUSTRIAL SUPERVISION

Course Descriptions

9.500 -- Elements of Supervision.

A basic introductory course covering in general terms the total responsibilities of a supervisor in industry, such as organization, duties and responsibilities, human relations, grievances, training, rating, promotion, quality-quantity control, management-employee relations, etc.

9.502 -- Basic Psychology for Supervisors.

Course to assist the supervisor in understanding the people with whom he works, with emphasis on the psychological aspects, perceptions, learning processes, emotions, attitudes and personalities, etc.

9.506 -- Human Relations. (Developing Supervisory Leadership) (Prerequisite: Basic Psychology for Supervisors)

To show the practical application of basic psychology in building better employer-employee relationships by studying Human Relations techniques.

9.516 -- Supervisor's Responsibility for Management of Personnel. (Prerequisite: Elements of Supervision)

Personnel techniques for which the supervisor is partially responsible and for which he should have some training in carrying out his responsibility. Selection, placement, testing, orientation,

training, counseling, merit rating, promotion, transfer, and training for responsibility.

9.518 -- Organization and Management.*

The supervisor's responsibility for planning, organizing, directing, controlling, and coordinating. Teaches the supervisor these basic functions of an organization and his responsibility in carrying out these objectives in accordance with the organization's plan. Establishing lines of authority, functions of departments or units, duties and responsibilities, policies and procedures, rules and regulations, etc.

*Prerequisite: Elements of Supervision.

9.508 -- Labor-Management Relations.

The history and development of the Labor Movement. Development of the National Labor Relations Acts, the Wagner Act, the Taft-Hartley Act. The supervisor's responsibility for good labor relations. The union contract and grievance procedure.

1.590 -- Industrial Economics.

Significant economic facts. Development of a critical attitude toward industrial economics. Institutions and practices that determine our social environment. Management-supervisory-employee relationships to economics and local industry.

9.512 -- Methods Improvement for Supervisors.

The supervisor's responsibility for job methods improvement. The basic principles of work simplification. Administration and the problems involved. Motion study fundamentals for supervisors. Time study techniques.

9.514 -- Cost Control for Supervisors.

How costs are determined in industry. Cost control and its functions. The supervisor's responsibility for costs. Factors in cost control: Costs, materials, waste, salvage, quality control, control of time.

9.920 -- Job Analysis for Wage Administration.

The history of wages. Inequalities in rates of pay. Management and union movement toward a "fair wage" plan. The supervisor and job descriptions, job classifications. The wage plan laid down by the Department of Labor. The Federal Employment Service. Wage administration and the line organization.

1.192 -- Communications for Supervisors I.*
(oral)

How we communicate. Effective speaking and listening. Kinds of supervisory communications. Saying what we mean, which covers oral versus written communications. Understanding what is communicated as related to intent and effect. Conference leading and practice for supervisors.

1.190 -- Communications for Supervisors II.*
(Written)

Review of writing mechanics covering grammar, punctuation, sentence structure, and paragraph structure. Business letter-writing involving the principles, planning and dictation of letters. Report writing covering the necessity, planning, and writing of reports. Memorandum and bulletin writing with emphasis on format, content, structure, tone, and style. Manual writing covering format, content, and structure.

*Prerequisite: Elements of Supervision.

9.522 -- Safety Training and Fire Prevention.

Problems of accidents and fire in industry. Management and supervisory responsibility for fire and accident prevention. Accident reports and the supervisor. Good housekeeping and fire prevention. Machine guarding and personnel protective equipment. State Industrial Accident Code and fire regulations. The First Aid department and the line supervisor's responsibility. Job instruction and safety instruction. Safety committee usage. Company rules and enforcement. Your insurance carrier and the Insurance Rating Bureau. Advertising and promoting a good safety and fire prevention program.

9.504 -- Developing the Employees Through Training.

The supervisor's responsibility for developing employees through training. Orientation and induction. Vestibule and on-the-job techniques. Job instruction principles. Apprenticeship training. Technical training. Supervisory training and management development. Use of outside agencies. Advisory committees.

9.505 -- Technical Training for Supervisors.
(In Related Fields)

Special courses in Electronics, Metallurgy, Blueprint Reading, Shop Mathematics, Inspection, Production Control, etc.

9.507 -- Report Writing.

See ENGINEERING TECHNOLOGY, Section B.

S E C T I O N F

A D U L T E D U C A T I O N

APPRENTICESHIP TRAINING

OCCUPATIONAL EXTENSION TRAINING

DISTRIBUTIVE EDUCATION

HOMEMAKING EDUCATION

GENERAL ADULT EDUCATION

VOCATIONAL AND GENERAL ADULT EDUCATION

ADULT EDUCATION

The purpose of the Adult Education program in the public schools is to provide lifelong learning opportunities for those persons who wish to improve themselves on the job, prepare for new work, or simply learn an avocation for recreational purposes. Adult Education also provides an opportunity for the individual to improve his general educational background, thereby becoming more interested in his community, and world affairs, thus becoming a more active citizen.

APPRENTICESHIP TRAINING

These classes are offered to enable apprentices to fulfill the apprenticeship requirements of 144 hours of related training each year. Anyone wishing to take these courses should be working at the trade or be a registered apprentice. The apprenticeship classes teach only the related technical phase of the occupation. All registered apprentices in Clatsop County will be notified by letter regarding the course requirements.

OCCUPATIONAL EXTENSION TRAINING

Courses provided in occupational extension are for those persons who are experienced workmen and wish to increase their performance skills, technical knowledge and related industrial information that will enable them to advance in their present occupation or to attain a promotion. Classes are conducted in any industrial occupation; skilled or semi-skilled trade or craft; or any occupation directly involved in the designing, producing, processing, assembling, maintaining, servicing or repairing of any manufactured product.

Training is also provided in other occupations, usually considered as technical, in which courses such as Practical Nursing, Laboratory Assistants, Draftmen, and Technicians are employed.

DISTRIBUTIVE EDUCATION

The purpose of Distributive Education is to increase the skill, technical knowledge, occupational information, morale, appreciation and judgment of management for workers who are involved in the distribution of farm and industrial products to manufacturers, retailers, jobbers, wholesalers, and others, or those who sell services. Classes are for persons employed in management, operation, or those who conduct a retail, wholesale or service business.

HOMEMAKING EDUCATION

The purpose of the adult homemaking program is to help family members improve the quality of their home life through more thoughtful and efficient development in utilization of human and material resources. To achieve this purpose, classes are provided to enable the homemaker to select, purchase and renovate clothing; how to serve, and conservation and storage of food; care of the house and its furnishings; care and guidance of children, and management of the home including conservative and wise use of energy, time and money by family members. Thereby making the homemaker a more valued person in the activities of the community.

GENERAL ADULT EDUCATION

Classes in General Adult Education are provided to enable persons to pursue a subject of interest. Generally, however, in the area of foreign languages, recreational or hobby activities. Classes are also provided to give the individual an opportunity to improve his general educational background with respect to the individual and how he fits into the modern day society. Classes in this category, for example, are such things as Driver Training, Painting and Drawing, Cake Decorating, Foreign Languages, Photography, Bridge, Square Dancing, Speed Reading, Creative Writing and Elementary and Secondary Education courses.

CLATSOP COUNTY COMMUNITY COLLEGE
ASTORIA, OREGON

For additional information tear out this page and
mail to the above address.

NAME _____

ADDRESS _____

TELEPHONE _____

I would like vocational testing ()

I would like you to visit my home ()

I would like an appointment to
discuss my educational plans ()

I would like to apply for ad-
mission ()

OTHER COMMENTS _____

ACADEMIC CALENDAR

1961 - 1962

Fall Term 1961

Sept. 20 (Wednesday)	Placement Testing
Sept. 21 (Thursday)	New Student Orientation
Sept. 22 (Friday)	Registration
Sept. 25 (Monday)	Classes Begin
Oct. 6 (Friday)	Latest date for registering or adding courses
Nov. 3 (Friday)	Latest day to drop a course
Nov. 17 (Friday)	Latest day to withdraw from college without responsibility for grades
Nov. 23 - 26 (Thurs. to Sun.)	Thanksgiving Vacation
Dec. 15 (Friday)	Classes End
Dec. 11 - 15 (Mon. to Fri.)	Final Examinations
	Pre-Registration for Winter Term

Winter Term 1962

Jan. 2 (Tuesday)	Registration
Jan. 3 (Wednesday)	Classes Begin
Jan. 16 (Tuesday)	Latest day for registering or adding Courses
Feb. 13 (Tuesday)	Latest day to drop a course
Feb. 16 (Friday)	Latest day to withdraw from college without responsibility for grades
Mar. 12 - 16 (Mon. to Fri.)	Spring Vacation
Mar. 23 (Friday)	Classes End
Mar. 19 - 23 (Mon. to Fri.)	Final Examinations
	Pre-Registration for Spring Term

Spring Term 1962

Mar. 23 (Friday)	Registration
Mar. 26 (Monday)	Classes Begin
April 6 (Friday)	Latest day for registering or adding a course
May 4 (Friday)	Latest day to drop a course
May 11 (Friday)	Latest day to withdraw from college without responsibility for grades
June 8 (Friday)	Classes End
June 4 - 8 (Mon. to Fri.)	Final Examinations
June 10 (Sunday)	Graduation Exercises
	End of School Year